

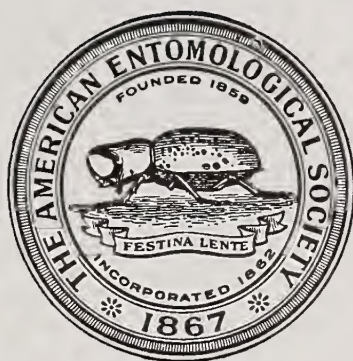
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**A SYSTEMATIC DATABASE OF *THEREVA* LATREILLE NAMES:  
AN ANSWER TO THE NOMENCLATURAL CHALLENGE IN  
THEREVIDAE (INSECTA: DIPTERA)**

By

KEVIN C. HOLSTON



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**A Systematic Database of *Thereva* Latreille Names:  
An Answer to the Nomenclatural Challenge  
in Therevidae (Insecta: Diptera)**

KEVIN C. HOLSTON

University of Illinois at Urbana-Champaign  
1101 West Peabody Drive  
EASC, MC-637  
Urbana IL 61801  
USA  
e-mail: kholston@life.uiuc.edu

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**ABSTRACT**—To facilitate systematics research on the genus *Thereva* Latreille, 1797, a systematic database of species-group names published in combination with the genus-group name *Thereva* before 1 January 2002 was developed. This nomenclatural database is presented herein with names organized alphabetically, geographically, and taxonomically (by genus classification) in formatted indices. Each of the three indices of the database includes 483 species-group names: 318 are valid, 92 are invalid, and 73 are unavailable. Of these 483 records, 203 refer to valid binomial names in *Thereva*. The database includes species-group names for taxa worldwide, and six species-group names refer to fossil taxa. These 483 species-group names identify taxa classified in 47 valid genera distributed among ten families of Diptera (Anisopodidae, Asilidae, Bibionidae, Muscidae, Mydidae, Rhagionidae, Stratiomyidae, Syrphidae, Tabanidae, and Therevidae). An historical account of the systematics of Therevidae, emphasizing the role of *Thereva* names and taxa, was developed to summarize results from this nomenclatural research, in which key events in zoological classification and dipterology are discussed in the context of *Thereva* systematics. The nomenclatural challenge (to locate, consolidate, and characterize established taxonomic names; to facilitate proper usage of these names; and to facilitate the addition of new names for taxa to the existing set of names) concerning the genus *Thereva* is addressed, therefore, from two perspectives. Additionally, the detailed historical perspective on the systematics of *Thereva* names was used to identify areas of further research necessary for improvements in the nomenclature (names database), and vice versa. As a result, nomenclatural issues involving the type fixation of *Thereva* and species-group homonymies relevant to *Thereva* names have been identified, and approaches outlined in this work to resolve these issues are suggested to improve future systematics research on Therevidae.

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PREFACE

*"Nomina si pereunt, perit et cognito rerum."* Fabricius, 1778 (*Philosophia entomologia*, sect. VII., para. 1)

Taxonomic names allow the data associated with organisms to transcend the moment of personal observation and become viable in the realm of scientific discourse. This fundamental property of taxonomic names renders the products of nomenclatural research invaluable for all scientific

disciplines, although nomenclatural research is usually neglected and regarded as esoteric, even "dry and tedious" (Bock 1994). Because of the importance of names for organisms they study, systematists regularly face a challenge that emphasizes the details of nomenclature necessary to

gain resolution on issues of proper name usage. The nomenclatural challenge facing systematists is to locate, consolidate, and characterize established taxonomic names; to facilitate proper usage of these names; and to facilitate the addition of new names for taxa to the existing set of names. The scientific rewards from answering this challenge are many, but the workers, due to the level of understanding necessary for following the official rules of nomenclature (Heywood *in* Jefferey 1973) and difficulty in obtaining resources essential to nomenclatural research (Bock 1994), are few.

Works devoted to nomenclature are produced in spite of these difficulties, but present the nomenclature of taxa in a format that has been greatly modified during the last century from extensive and multifaceted to abridged and specialized. Recent catalogs and checklists of Diptera names, for example, are principally faunistic treatments on the major biogeographic regions, and most are tailored to promote the identification and use of valid taxonomic names (Stone *et al.* 1965, McAlpine *et al.* 1981). Tailoring contemporary nomenclatural works to provide this service involves an emphasis on subjective synonymy, type-specimen locality, and distributional data. It also involves the omission of many invalid names and most unavailable names (e.g., misspellings, subsequent combinations of species-group names, and subsequent usages) and the replacement of exhaustive lists of citations providing the details of name usage (seen in most nomenclatural works on Diptera before 1850) with a single citation for original name usage. These omissions make these nomenclatural summaries well-suited to guide the correct usage of names, but they also reflect an important truth: presenting the complete nomenclature of taxa while promoting the correct usage of taxonomic names becomes increasingly difficult as more taxonomic works are published.

Quite recently, computer-based nomenclatural works have been developed for CD-ROM disks and World Wide Web (WWW) searchable databases that have begun to address this historical trend of excluding details of name usage (Table 1). Many databases are available using a read-only CD-ROM disk or through a WWW interface. Several databases are available in printed, CD-ROM, and WWW formats, further increasing the accessibility of nomenclatural data. An example is the

"Systematic Database of *Musca* Names (Diptera)," which was first published in print medium and then made available via CD-ROM and WWW formats as part of the "Biosystematic Database of Diptera Names," designed to help dipterists "master the names of flies" (Thompson *in* Thompson & Pont 1994: 221).

The strengths of computer systems to develop and present nomenclatural databases include unambiguous identification and characterization of names as independent records, flexibility in presenting and accessing data (which obviates the need for numerous printed indices), and speed in answering queries.<sup>1</sup> Relational databases have the additional strength of being able to reflect the intricate relationships among names by associating records for names using relational fields. Names may be organized (e.g., alphabetically, chronologically, taxonomically, by author, by date, by biogeographic realm, by taxonomic rank) not only as a function of the database structure, but also through sorts of the independent records by data in selected fields to generate useful groupings. Additionally, the production of traditional nomenclatural summaries is facilitated by these computer-searchable databases, in part because the export of data from computer databases is necessarily a selective process. Although many taxon-specific databases effectively manage nomenclatural data, most have not extended the capabilities of these computer-based technologies beyond those of printed nomenclatural works, particularly in establishing the complex links among the names.

It is in this context that the "Systematic Database of *Thereva* Names" was conceived and developed, in an attempt to successfully address the nomenclatural concerns of systematists with respect to the challenges presented by the accumulation of nomenclatural data. The database manages the complete species-group nomenclature of *Thereva* Latreille, 1797, and was created using a pre-existing a relational database system, Mandala™. This relational database system allows all relevant species-group names to be included and all nomenclatural relationships among them to be reflected. In addition, the database will be made available as part of the worldwide biosystematic database on Therevidae on the WWW ([www://inhs.uiuc.edu/cee/therevid/](http://inhs.uiuc.edu/cee/therevid/)). The database is published in both traditional (i.e., print media) and computer-based (i.e., CD-ROM: K.C.Hol-

Table 1. Examples of taxonomic databases devoted to or with a major component of nomenclature, and the formats through which they have been made available.

Database Name	Print Format	WWW Format	CD-ROM Format
Catalog of Fishes	California Academy of Sciences, 1998. [3 vols.]	[as "The <i>Catalog of Fishes</i> On-Line"] <a href="http://www.calacademy.org/research/ichthyology/catalog/catalog%20online.html">http://www.calacademy.org/research/ichthyology/catalog/catalog online.html</a>	1998
FishBase 99	(none)	<a href="http://ibs.uel.ac.uk/fishbase/fishgen.htm">http://ibs.uel.ac.uk/fishbase/fishgen.htm</a>	(none)
Orthoptera Species File	Academy of Natural Sciences of Philadelphia, 1994-. [3 vols.—series in progress]	<a href="http://viceroy.eeb.uconn.edu/Orthoptera">http://viceroy.eeb.uconn.edu/Orthoptera</a>	[as the "Illustrated Catalog of Orthoptera, Vol. I: Tettigonioidae (Katydids or Bush- crickets)"] 1999; ISBN 1-929014-00-7
Index Kewensis	Oxford University Press, [serial publication, covers names from 1895 to the present]	(none)	[as "Index Kewensis 2.0"] Oxford University Press, 1997. [covers names from 1895 to June 1996]
Index to Organism Names	(none)	[as "TRITON, the Taxonomy Resource & Index To Organism Names", 1997; prototype version 1.0] <a href="http://www.york.biosis.org/triton/indexfm.htm">http://www.york.biosis.org/triton/indexfm.htm</a>	(none)
The Integrated Taxonomic Information System (ITIS)	(none)	<a href="http://www.sp2000.riken.go.jp/dynamic_htmlnone">http://www.sp2000.riken.go.jp/dynamic_htmlnone</a>	(none)
Mammal Species of the World	Smithsonian Institution Press, 1993.	[USNM] <a href="http://www.nmnh.si.edu/msw/">http://www.nmnh.si.edu/msw/</a>	(none)
Nomina Insecta Nearctica	Entomological Information Services, 1996 [3 vols.]	(none)	Entomological Information Services, 1997
Scalenet	(none)	[SEL-BIOTA] <a href="http://www.sel.barc.usda.gov/scalenet/scalenet.htm">http://www.sel.barc.usda.gov/scalenet/scalenet.htm</a>	(none)
Systematic Botany and Mycology Fungal Databases	includes three works: <i>Fungi on Plants and Plant Products in the United States</i> , 1989. <i>Index to Saccardo's Sylloge Fungorum</i> , 1881 to 1931 and 1972 [26 vols.]. <i>International Mycological Institute's Index of Fungi</i> , 1940–1980.	<a href="http://nt.ars-grin.gov/fungaldbases/DatabaseFrame2.cfm">http://nt.ars-grin.gov/fungaldbases/DatabaseFrame2.cfm</a>	(none)
Systematic Database of Musca Names	<i>Theses Zoologiae</i> . Koeltz Scientific Books 1994. 20: 1–221.	[accessible as part of the "Biosystematic Database of World Diptera," in preparation]	[accessible as part of <i>The Data Diptera Dissemination Disk—Volume One</i> , "Biosystematic Database of Diptera Names"] 1998; ISSN 1521-0014

Table 1. (Continued)

Database Name	Print Format	WWW Format	CD-ROM Format
VAST (VAScular Tropicos) rev. 1.5 [nomenclatural database]	(none)	[as "W <sup>3</sup> TROPICOS": Missouri Botanical Gardens] <a href="http://mobot.mobot.org/Pick/search/pick/html">http://mobot.mobot.org/Pick/search/pick/html</a> [also accessible as part of the "Index of Organism Names"]	(none)
Zoological Record	BIOSIS and the Zoological Society of London, annual publication, covers 1864 to present.	[accessible as part of the "Index of Organism Names" ]	BIOSIS and the Zoological Society of London, 1999. [3 discs covering v. 115–121 (1978–1984), v. 122–128 (1985–1992), v. 129–132 (1993–1996)]

ston, G.E. Kampmeier, & F. C. Thompson, in prep. for *Diptera Data Dissemination Disc*, ed. F. C. Thompson) formats. This will allow the user access to the data enhanced by the strengths of electronic and print media. Furthermore, the database of *Thereva* species-group names presented in this work extends the scope and accuracy of taxonomic work on the family Therevidae and several other families of Diptera far beyond the current checklists and catalogs.

This paper heralds the completion of two major projects advancing the systematic research on the family Therevidae (Diptera: Asiloidea) and the genus *Thereva*. The "Systematic History of *Thereva* Names," presented in the first section of this paper, is a synopsis of the systematic research on *Thereva* and the family Therevidae. This history was developed after a review of taxonomic literature on Diptera and Therevidae that ultimately included biographies of dipterists and various works concerning nomenclature and the history of systematics. A review of genus-group nomenclature concerning *Thereva* is provided as part of the historical account, with a detailed evaluation of the nomenclatural issues identified in the main text. The "Systematic Database of *Thereva* Names," which constitutes the second section of this work, presents all species-group names used in combination with the genus-group name *Thereva* and is presented herein as three printed indices generated from data published in the CD-ROM version. In addition, the results from this research have been used to improve an interna-

tional project on the nomenclature of Diptera: the aforementioned "Biosystematic Database of World Diptera."

## SYSTEMATIC HISTORY OF *THEREVA* NAMES<sup>2</sup>

### INTRODUCTION

The history of many modern dipteran groups begins with the genus *Musca*,<sup>3</sup> for which an historical account has been provided by Thompson & Pont (1994). These authors follow the nomenclatural transformation of the Latin name *musca* (Gk., μύια) from the colloquial label of ancient times to the genus-group name used by Linnaeus. The historical scope of this account includes references to *musca* before and after 1758, the retrospectively assigned starting point of binomial nomenclature (Melville 1995). Thompson & Pont reveal their extensive breadth of knowledge and insight concerning the authors who published works on flies and the impact of these works on the systematics of *Musca* and Diptera.

After 1800, as zoologists began to catalog biodiversity in earnest and increase their knowledge of taxa through systematic research, there was an increase in taxonomic specialization in zoology (Mayr & Ashlock 1991). The corresponding taxonomic works on flies reflect this trend, changing from extensive zoological works featuring all known Diptera to works devoted to single families or genera. Historical accounts of dipteran genera proposed by Linnaeus and Fabricius (i.e.,

before 1805) in these extensive zoological works are particularly relevant to the systematics of other genera. Having been proposed by Linnaeus in 1758, a history of *Musca* provides an overview of the history of systematics in Diptera. In this way, the history of the genus *Musca* serves as a prospectus on the systematics of many modern genera of Diptera, including *Thereva*.<sup>4</sup>

This technique may also be employed in family-level studies. An historical account of a genus that is the type genus and/or progenitor of other genera within a family illuminates the systematics of the family. Similar to the genus *Musca*, which is the original genus of several hundred species group names in Diptera, *Thereva* is the original genus for 141 valid species group names for taxa presently dispersed throughout Diptera and the family Therevidae. The genus-group name *Thereva* has been used in primary combination with approximately one-fourth of all species-group names in Therevidae, and the type species of over 15 genera of Therevidae were originally described in *Thereva*. Therefore, a history of *Thereva* names provides an optimal perspective for an historical account of the family Therevidae.

The following history of the genus *Thereva* is the second attempt to elucidate major changes in the systematics of the family Therevidae after the brief historical account written in 1923 by Frank Cole. Meigen gave an early, but very complete, account of the systematics of Therevidae, identified as "Xylotomae," in his *Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten, Zweiter Theil*, 1820. In the account presented here, the following historical phenomena are recognized and discussed within the larger contexts of dipterology and systematics: 1) taxonomic specialization, 2) periodic summaries, 3) periodic updates of databases, and 4) surges of discovery.

Major advances in the systematics of *Thereva* and Therevidae were identified primarily through a chronological survey of nomenclatural literature relevant to *Thereva* species-group names. Additional biographical sources provided essential information on dipterists and their works on Diptera and specifically on Therevidae. Chronological lists of stiletto fly genus-group names and species-group names, generated from the computer database, were used to define the time periods delineated in this account. In general, the "Systematic History of *Thereva* Names" was modeled after the "Systematic History of *Musca*," (Thompson & Pont 1994) as part of the

"Systematic Database of *Musca* Names." Translations of Latin, German, and French texts are attributable to the author unless otherwise noted.

The starting date for the history of the genus *Thereva* may be attributed retrospectively to any of four years corresponding to four major nomenclatural events. 1) In 1758, Linnaeus proposed the oldest species-group name that has been used in combination with *Thereva* (*plebeja* Linnaeus, 1758: 589; originally in combination with *Musca*). 2) In 1797, Latreille first proposed the genus-group name *Thereva*. 3) In 1798, Fabricius proposed the first species-group name that was originally combined with *Thereva* (*analis* Fabricius, 1798: 561). 4) Finally, in 1820, Meigen proposed the first species-group name that was originally combined with *Thereva* for a taxon currently classified as a stiletto fly (*cincta* Meigen, 1820: 117). For the "Systematic History of *Thereva* Names," the year 1758 was chosen because it allows one to examine the complete nomenclatural history concerning all *Thereva* species-group names and is the starting date of zoological nomenclature in Diptera (Tuxen 1973, Melville 1995).

#### DISCOVERY AND CHARACTERIZATION OF *THEREVA* (1758–1820)<sup>5</sup>

##### *The Recognition of Stiletto Fly Taxa*

The oldest species-group names associated with the genus *Thereva*, and consequently with the family Therevidae, date back to the earliest zoological works of binomial nomenclature. In 1758, the Tenth Edition of the *Systema Naturae* was published in which the Swedish biologist and physician Carolus Linnaeus<sup>6</sup> distributed species of two-winged insects, his order Diptera,<sup>7</sup> among 10 genera. Linnaeus, the author of over 250 species-group names in Diptera (Thompson & Evenhuis 1998), worked as a systematist on all major taxonomic divisions. Scientists of philosophy and natural history who also made significant advances in the realm of biological classification predate Linnaeus (e.g., Aristotle, John Ray), but the works of Linnaeus lay the primary foundation upon which the scientific nomenclature of Animalia, and, therefore, Diptera, has been built.

Linnaeus defined his genera of Diptera using characters of the proboscis and palpus and provided keys as footnotes that divided genera into smaller groups. Notwithstanding the significant advances of *Systema Naturae* from previous sys-

tematic works, the characters Linnaeus identified in this comprehensive database of names delineated groups that are wildly heterogenous in comparison to present generic circumscriptions. Thus, Linnaeus classified the first described stiletto fly species, "*Musca plebeja*,"<sup>8</sup> with a diversity of brachycerous flies in the genus *Musca* (Thompson & Pont 1994).

The species-group name *plebeja* was first of the 100 names listed in this summary of taxonomic data on the genus *Musca* by Linnaeus. This Palaearctic species was separated from other species of *Musca* by antennal characters and body vestiture. In the second edition of *Fauna Svecica*, Linnaeus redescribed "*Musca plebeja*," adding that this species is widespread, but not found abundantly (Linnaeus 1760).<sup>9</sup> This characterization of *Musca plebeja* and the species binomial itself, loosely translated as "the common musca," is striking because stiletto flies are generally considered uncommon to rare flies in comparison to many other species of flies named by Linnaeus (e.g., *Musca domestica* L., 1758, *Musca vomitoria* L., 1758). Several other authors have described the abundance of "*Musca plebeja*" in terms similar to Linnaeus (Fallén 1814a, Macquart 1826, Macquart 1834, Zetterstedt 1842, Walker 1851). However, more recent authors have shown that this "common musca" of Linnaeus is a variable species that is often misidentified with other species of *Thereva* (Verrall 1909, Kröber 1925).

In *Fauna Svecica*, Linnaeus also described "*Musca anilis*,"<sup>10</sup> the second oldest species-group name for a stiletto fly (Linnaeus 1760). The descriptions Linnaeus gives for "*Musca plebeja*" and "*Musca anilis*" in *Fauna Svecica* have considerably more taxonomic information than diagnoses in *Systema Naturae*, including tibial color and details of abdominal appearance. These are the only species of stiletto flies Linnaeus ever described and named, but they each represent the basis of a generic concept in Therevidae: *Thereva* and *Dialineura*.<sup>11</sup> The descriptions of "*Musca plebeja*" and "*Musca anilis*" by Linnaeus in 1760 reveal differences in the size and shape of the scape and antennal flagellum, character states which later motivated Camillo Rondani<sup>12</sup> (1856) to propose the genus *Dialineura* for *Musca anilis* Linnaeus.

After 1760, Johann Christian Fabricius,<sup>13</sup> a former student of Linnaeus (Papavero 1971), developed his own classification system for insects, which he first promoted in 1775 with his *Systema*

*Entomologiae*. Fabricius, working primarily in Kiel and traveling extensively throughout Europe (Papavero 1971, Tuxen 1973), was among the first zoologists to specialize on the systematics of insects, which included taxa of modern Insecta and Arachnida. Abandoning the names Linnaeus used for orders of insects, as they were based on the wings, Fabricius relied on the mouthparts to name and delineate groups at the ordinal level. He replaced the name Diptera with Antliata, a name derived from the Greek *antlia* in reference to the sucking mouthparts of these insects. Fabricius included nine more genus names in Antliata than Linnaeus had in Diptera, and Fabricius employed characters of the "haustellum" and "palpi" to distinguish among his genera of flies (Fabricius 1775). In this new classification, Fabricius moved "*Musca plebeja*" and "*Musca anilis*" into the genus *Bibio*.<sup>14</sup> On page 756 of *Systema Entomologiae*, Fabricius provides a short diagnosis for *Bibio*:

BIBIO. Os proboscide atque haustello.  
Haustellum setis tribus vaginaque  
univalvi.  
Palpi brevissimi.  
Antennae filatae.

Fabricius had usurped this genus-group name from Étienne Geoffroy's<sup>15</sup> *Histoire abrégée des insectes qui se trouvent aux environs de Paris* (Geoffroy 1762), along with the genus-group names *Stratiomys*<sup>16</sup> and *Stomoxys*<sup>17</sup> (ICZN 1957). Geoffroy had already presented equivalent Latin and French diagnoses for *Bibio* ("*Le Bibion*."") in 1762, found on pages 448, 450, and 568 of his *Histoire abrégée*. The Latin version reads as follows:

Antennae taxiformes, perfoliatae, capite vix longiores.  
Os tentaculis incurvis articulatis.  
Ocelli tres.

Geoffroy reported details of adult morphology that differentiated *Bibio* from and allied *Bibio* to other genera of Nematocera, namely *Tipula*,<sup>18</sup> and he presented a habitus illustration that is recognizable as a bibionid in the modern sense (Planche XIX, Fig. III., "*Le bibion*."). Geoffroy (1762: 570–572) included "*Tipula febrilis*" Linnaeus, "*Tipula hortulana*" Linnaeus, "*Tipula phalaenoides*" Linnaeus, and two of his own species within the original generic circumscription of

*Bibio*.<sup>19</sup> These species are now classified in the families Bibionidae and Psychodidae.

Nevertheless, Fabricius described the third stiletto fly species, "*Bibio nobilitata*,"<sup>20</sup> under his modified circumscription for *Bibio* and moved the species of Geoffroy's *Bibio* back into in the genus *Tipula*. The fourteen species-group names Fabricius associated with *Bibio* in 1775 included modern Bombyliidae, Therevidae, Stratiomyidae, Mydidae, but only one species of modern Bibionidae.<sup>21</sup> Fabricius later seemed to repeat this imprudent nomenclatural protocol in 1798 with the genus *Thereva*, further compounding the profound influence on stiletto fly classification and nomenclature that he began in 1775 (Fig. 1).

In 1776, Charles De Geer<sup>22</sup> published the sixth volume of his *Mémoires pour servir à l'histoire des insectes*, which served to advance significantly the taxonomic and biological knowledge of stiletto flies. In this work, De Geer gave detailed descriptions of two stiletto fly taxa under *Nemotelus*,<sup>23</sup> proposing the species-group names "*fasciatus*"<sup>24</sup> and "*hirtus*."<sup>25</sup> Using the term "*famille*" for subgeneric divisions, De Geer classified these two stiletto fly species in his "*Nemoteles de la seconde famille*," which he distinguished by their cylindrical, bare antennae. Interestingly, De Geer noted similarities in the antennae of therevids and asilids and included "*Musca fenestralis*" Linnaeus,<sup>26</sup> a scenopinid, in this same division of *Nemotelus*.

In this same volume, De Geer described the frontal callus of "*Nemotelus fasciatus*" as "*deux éminences ou plaques presque circulaires d'un noir poli & luisant*," which is the second description of these structures in reference to stiletto fly taxa. De Geer correctly identified the sex of the specimen he described as female, which was not noted in the first description of the frontal callus. In the second volume of his 1762 work, *Histoire abrégée des insectes*, Geoffroy presented the first known description of the frontal callus of a stiletto fly. Geoffroy described this stiletto fly as a species of *Tabanus* ("*Le taon noir à anneaux du ventre bordés de blanc*") on page 462:

Ses yeux sont bruns, & le reste de sa tête est gris, avec deux taches noires luisantes placées entre les deux yeux & qui touchent l'une l'autre.<sup>27</sup>

The frontal callus of female specimens of *Thereva* has been especially prominent in diagnoses for

species-level identifications (Kröber 1912a–g, Kröber 1913a–c, Cole 1923, Trojan 1970, Lyneborg & Spitzer 1974, Tóth 1977), and characteristics of the frons are currently used to distinguish stiletto fly genera (Lyneborg 1976a, Irwin & Lyneborg 1981a–b). Although the species described by Linnaeus, *Thereva plebeja*, also displays a striking frontal callus, De Geer was the first to establish this feature as a diagnostic species-level character.

Most significantly, De Geer provided the first known taxonomic and biological data for stiletto fly immatures in the last paragraph describing *Nemotelus hirtus* (1776: 188). He recognized the fossorial habitat of the larva, likened the appearance of the larva to a "*petit serpent blanc*" pointed at both ends, and reported that the last instar larval exuvium is entirely shed during pupation. These observations by De Geer were referenced in the sixteenth volume of the *Dictionnaire Classique d'Histoire Naturelle* (Latreille 1830), after which descriptions of stiletto fly larvae remained scarce but gradually became more detailed (Zetterstedt 1838, Westwood 1840a, Kingsley 1884, Lundbeck 1908, English 1950). The larval morphology first described in 1776 by De Geer proved critical in establishing phylogenetic hypotheses for Therevidae within brachycerous Diptera nearly 150 years later.

Although most other workers simply followed the classifications of Diptera established by Linnaeus and Fabricius prior to 1796, an English entomologist, Moses Harris,<sup>28</sup> also identified and named additional stiletto fly taxa. Beginning in 1776, Harris ultimately presented five decads which comprised a faunistic treatise on English insects. Harris emphasized wing maculations and venation patterns while demoting the importance of antennal characters in his classification scheme. Building higher-level classifications using wing venation patterns is a well-established paradigm in modern systematics research on Diptera, but characters of wing venation remained largely unexplored after Harris until the mid-1800s (Thompson & Pont 1994). In Decad IV, Harris (1779: 103) described two stiletto fly taxa in his second section of *Sylvicola*:<sup>29</sup> "*Sylvicola unicus*"<sup>30</sup> and "*Sylvicola monos*."<sup>31</sup> Although the descriptions of these species are hardly as detailed as those of De Geer or Geoffroy, Harris did note the presence of frontal calli for the female of "*Sylvicola unicus*." The taxonomic summaries of Harris' contemporaries, such as Gmelin<sup>32</sup> and Turton,<sup>33</sup>

deviated only slightly from the format and classification of Linnaeus and did not generate names for new stiletto fly taxa.<sup>34</sup>

### *The Clash of Classifications*

Fabricius and Pierre André Latreille,<sup>35</sup> a prominent French contemporary of Fabricius, worked steadily into the 1800s on the systematics of Animalia, but differed greatly in their taxonomic philosophies and resulting classifications of stiletto fly taxa. Latreille supported the use of multi-character systems in classification for the sake of utility whereas Fabricius relied on fewer characters in the interest of clarity (Latreille 1797, Thompson & Pont 1994). Additionally, Latreille promoted an expanded classification hierarchy for Animalia that delineated more ranks than the four-tiered classification (i.e., classes, orders, genera, and species) of Fabricius and Linnaeus. Use of the term "family" for a group of genera dates to Latreille, 1797, and the term "family" has been adopted as a subordinal rank within most modern zoological classification systems. Both Fabricius and Latreille believed their own methodology would lead to natural groups, but Latreille (1797: page v; *Preface*) suggested that he and other entomologists questioned Fabricius' disregard of characters other than those identified from the "organs of nutrition" (Latreille 1797).

By 1797, Fabricius had already established himself as the most influential entomologist of his time and the primary source of post-Linnaean classifications for insects. However, his reductionist approach to taxonomy was especially troubling to Latreille, who wrote a forceful yet respectful argument against the taxonomic philosophy of Fabricius as part of the introduction to *Précis des caractères génériques des insectes, disposés dans un ordre naturel*.<sup>36</sup> Latreille presented a comprehensive catalog of genus names for Diptera in his *Précis* and included his own changes from previous generic diagnoses to repair "le désordre" in names, caused in part by Fabricius' neglect of a "riche mine" of characters (Latreille 1797). Nevertheless, Fabricius apparently remained content with his philosophy and usage of *Bibio*, having described another stiletto fly taxon as "*Bibio flavipes*"<sup>37</sup> in 1794.

In his *Précis*, Latreille proposed the genus-group name *Thereva*, giving the following attribution and diagnosis on pages 167 and 168:

#### G. XXXIX. THÉRÈVE. THEREVA.

*Musca*, Linn. *Tabanus*, Geoff. *Bibio*, Fab.

Antennes de la longueur de la tête; dernier article conique, articulé à l'extrémité, avec une petite soie latérale. Trompe et antennes cachées dans le repos.

Latreille continued with the following description of *Thereva*, giving additional characters whose current taxonomic relevance is mainly limited to superfamily-level characters (Diptera: Asiloidea):

C.H. Tête de la largeur du corcelet, hémisphérique, occupée par les yeux postérieurement; trois petits yeux lisses sur une élévation. Corcelet cylindrique. Ailes [sic] écartées, un peu assurgentes. Abdomen conique, déprimé. Pattes moyennes; deux pelotes. Corps velu.

Latreille did not list, however, any species-group names after his diagnosis of *Thereva*, or after any other genus names he gives in this work. In retrospect, this was an error in judgement by Latreille, and the subsequent use of *Thereva* by Fabricius launched an era of nomenclatural confusion.

In 1798, the *Supplementum entomologiae systematicae* was published in which Fabricius redefined *Thereva*, without acknowledging Latreille's prior use of the name, and explicitly defined its circumscription. Fabricius listed genus names with subtending diagnoses at the beginning of this work, focusing on the morphology of the mouthparts and antennae. For *Thereva*, on pages 548 and 549, he wrote:

#### THEREVA.

Os proboscide, haustello palpisque.

*Proboscis* intra aperturam orbiculatam oris retracta, cornea, in medio geniculata, rigida apice bilabiata: labiis aequalibus, ouatis, dorso-canaliculata: marginibus eleuatis, carinatis.

*Haustellum* proboscide breuiore, pilosi, filiformes insidentes margine squamoso, membranaceo proboscidis ante geniculum.

*Seta* unica, rigida, acuta absque vagina? [sic]

*Palpi* duo proboscide multo breuiore, pilosi, filiformes insidentes margine squamoso, membranaceo proboscidis ante geniculum.

*Antennae* breues, incumbentes, compressae, extrorum crassiores, setariae.

On page 560 of the same work, Fabricius gave a shorter diagnosis of *Thereva*:

THEREVA. *Proboscis* cornea: lateribus reflexis, carinatis  
*Palpi* duo filiformes, pilosi, squamae membranaceae ante geniculum proboscidis insertae.  
*Antennae* breues compressae, incumbentes.

Fabricius' genus diagnoses, accompanied by a general description of *Thereva* on the bottom of page 560, differ greatly from the description he gives for *Bibio*. His *Thereva* clearly included brachycerous flies having the antennae touching and recumbent instead of sectioned in appearance, as in his *Bibio*.<sup>38</sup> The diagnosis Fabricius gave for *Thereva* is much closer to his *Syrphus*,<sup>39</sup> which is the original genus of four taxa he lists as *Thereva* in 1798. Under his diagnosis of *Thereva*, Fabricius listed and described six taxa, none of which can be confused as members of the genus *Thereva* that Latreille had defined in 1797. This action was extremely significant: by listing these six species under *Thereva*, Fabricius established these six species as the original nominal species of *Thereva*. According to Article 67 of the Code, these six species-group names must be used in any subsequent type-species fixation for *Thereva* (ICZN 1999). Unfortunately, all six of these species are currently classified in Tachinidae.<sup>40</sup>

### The Bifurcation of *Thereva*

Latreille challenged the classification and circumscription of *Thereva* promoted by Fabricius with two works before Fabricius answered with his final publication in 1805. In 1802, Latreille added little to his previous diagnosis of *Thereva* in his *Histoire naturelle, générale et particulière des crustacés et des insectes*, placing the genus in his *famille septieme*, "Rhagionides," with *Rhagio*<sup>41</sup> and *Anthrax*<sup>42</sup> (Meigen 1804). Latreille gave at least one "exemple" for each genus following the re-descriptions and identified "*Bibio plebeja*. F." as the "exemple" for *Thereva* (Latreille 1802). Latreille then complemented these taxonomic assertions in 1804 with a "*tableau méthodique*": a hierarchical, but non-dichotomous, identification key to the families and genera of insects. In this key, Latreille simply reidentified his *Thereva* as the *Bibio* of Fabricius. Latreille distinguished *Thereva* within his "*famille VIII*" of Diptera, "*Tabanii*," by the presence of an articulated style in *Thereva* and the strongly-pointed proboscis of other "*Tabanii*"

(Latreille 1804). In that same work, Latreille proposed the genus-group name *Phasia*<sup>43</sup> for "*les Thérèves de M. Fab.*" without establishing any nominal species, and did the same for *Thereva* (Latreille 1804) (Fig. 1). Nevertheless, Fabricius continued to use his own concepts of *Thereva* and *Bibio* and his three-rank system of "ordines, genera, [and] species" for taxa within the class Insecta (Fabricius 1805). In 1805, when his last work on insect classification was published, Fabricius proposed eight species-group names for tachinid taxa under *Thereva* and three species-group names for stiletto fly taxa under *Bibio* but did not recognize the genus *Phasia*.

Whereas no works were published during this time to substantiate *Thereva* of Latreille, Fabricius had already developed a strong following by 1800 that not only supported his classification but also published on *Thereva*. Georg Wolfgang Panzer<sup>44</sup> produced a grand entomological work entitled *Favnae Insectorum Germanicae initia oder Deutschlands Insecten*. Published in 109 Hefts from 1792 to 1810, Panzer presented illustrated plates of taxa described by other authors and Panzer himself. He followed the classification of Fabricius, describing a new stiletto fly under *Bibio* and proposing three new names under *Thereva*. In 1802, Charles Walckenaer<sup>45</sup> adopted the same classification, which he states in the subtitle to his work: "*Histoire abrégée des insectes des environs de Paris, classés d'après le système de Fabricius.*" This distinction among classifications may have referred to that of Linnaeus, but it is interesting to note that Walckenaer did not cite any works by Latreille in reference to *Bibio* or *Thereva*. Walckenaer did not describe any new species of *Thereva* but gave brief descriptions for the species classified as *Thereva* by Fabricius in 1798, except *Phasia obesa* (Fabricius).<sup>46</sup>

After the death of Fabricius in 1808, Latreille continued to promote his generic concepts and malleable classifications (Thompson & Pont 1994) in opposition to the legacy of Fabrician classification. Latreille noted in 1809 that Fabricius, Rossi,<sup>47</sup> Cuvier,<sup>48</sup> Illiger,<sup>49</sup> Schellenberg,<sup>50</sup> and Meigen<sup>51</sup> had used *Bibio* instead of Latreille's *Thereva* for an identical set of taxa. Furthermore, Latreille listed species names and figures from works he considered applicable to taxa in his *Thereva*. On page 296 of this work, Latreille reiterated that his circumscription of *Thereva* should supplant that of Fabricius, basing his argument on priority:

1760					<b><i>Bibio</i> Geoff., 1762: 168</b> [1762] Geoffroy identified five taxa, with non-binomial names, as his <i>Bibio</i> that are in Bibionidae and Psychodidae.
1775				<b>"<i>Bibio</i> Fabr., 1775: 756"</b> [1775] Fabricius moved <i>Musca Plebeja</i> L. to <i>Bibio</i> and named two therevid taxa in <i>Bibio</i>	
1787					[1787] Fabricius names two more therevid taxa in <i>Bibio</i>
	<b><i>Thereva</i> Latr., 1797: 196</b>				
1797	[1797] Latreille proposed the genus <i>Thereva</i> without designating a type	<b>"<i>Thereva</i> Fabr., 1798: 548"</b>			
1798	[1802] Latreille gave <i>M. plebeja</i> L. as an "exemplum" of <i>Thereva</i>	[1798] Fabricius moved three species of tachinids from <i>Syrphus</i> to <i>Thereva</i> and named two tachinids in <i>Thereva</i>			
1802					[1802] Latreille gave " <i>Tipula hortulana</i> . Lin.— <i>Hirtea hortulana</i> F." as "exemplum" of <i>Bibio</i>
1804			<b><i>Phasia</i> Latr., 1804: 379</b>	[1804] Meigen adopted classification of Fabr., using <i>Bibio</i> Fabr. but not <i>Thereva</i> sensu Fabr.	
1810	[1810] Latreille gave, as "l'espèce qui sert de type" for <i>Thereva</i> , " <i>Bibio plebeja</i> , Fabr."	[1805] Fabricius and Panzer named a total of ten tachinids as species of <i>Thereva</i>	[1810] Latreille gave as "l'espèce . . . qui sert de type" for <i>Phasia</i> , " <i>Thereva subcoleoprata</i> , Fabr."	[1814, 1817] Fallén redescribed species in <i>Bibio</i> , following the classification of Fabricius	[1810] Latreille gave, as "l'espèce qui . . . sert de type" for <i>Bibio</i> , " <i>Hirtea hortulana</i> , Fabr."
1820	[1820] Meigen used <i>Thereva</i> for therevid taxa, naming 12 taxa [1821–1838] Macquart, Say, and Wiedemann all followed Meigen's use of <i>Thereva</i>	[1814, 1815] Fallén used <i>Thereva</i> for tachinid taxa and named 7 species [1820] Fallén gave the last major usage of <i>Thereva</i> to name tachinid taxa		[1824] Meigen used <i>Phasia</i> for tachinid taxa, giving names for new taxa in <i>Phasia</i>	[1821] Wiedemann used <i>Bibio</i> to name two species of <i>Bibio</i> , sensu Geoffroy
1838		[1838] Zetterstedt restricted the concept of <i>Thereva</i> by proposing the genus <i>Psilocephala</i>			

Figure 1. Synopsis of the early systematic history (1758–1838) *Thereva*, emphasizing the taxonomy and resulting nomenclature of *Thereva* in relation to *Bibio* and *Phasia*.

Denominationem a Fabricio generi impositam, insecta diversissima longe antea designatam, in libro, *Préc. des caract. génér. des Insect.*, pag. 167, mutavi. Nomen substitum, *Thereva*, deinceps userpavit hic entomologus et confussionem misere auxit.

Latreille also moved *Thereva* from "Tabanii" into in his family "Mydasieni" with *Mydas*<sup>52</sup> in 1809.

Latreille used this classification in 1810 for his *Considérations générales sur l'ordre naturel des animaux*. In *Considérations*, he produced another extensive "tableau méthodique de . . . genres, disposés en familles" for the identification of crustaceans, arachnids, and insects with explicit type-species designations in an attempt to distinguish his generic concepts from those of Fabricius. Relevant to the nomenclature of *Thereva* are Latreille's type-species designations for *Thereva* on page 443 ("Thérève. *Bibio plebeia* [sic], Fab.") and *Phasia* on page 444 ("Phasie. *Thereva subcoleoprata*, Fab."). In spite of Latreille's persistent efforts, it was the work published eight years later by the German entomologist Johann Wilhelm Meigen that resolved this schism of usage concerning *Thereva*.

Carl Fallén,<sup>53</sup> a Swedish contemporary of Meigen, concentrated his dipterological efforts on the fauna of Sweden from 1814 to 1826, authoring a 47-fascicle work usually referred to as *Diptera Sveciae* (Evenhuis 1997a). Fallén also used *Thereva* and *Bibio* in the sense of Fabricius. In an article published in 1815 entitled "*Ofer några Rot-fluge Arter, horande till slågterna Thereva och Ocyptera*" (not part of *Diptera Sveciae*), Fallén proposed four new species-group names in combination with *Thereva*, writing the diagnoses in Latin and the descriptions in Swedish. In 1820, Fallén gave Latin translations of these original descriptions in *Rhizomyzides Sveciae*, all of which refer to tachinid taxa.<sup>54</sup> He placed *Bibio* in his family Anthracides and described three new stiletto fly taxa in *Bibio*: one as new with the other two taxa misidentified as known species (Meigen 1820, Zetterstedt 1842). This was the last major taxonomic usage of *Bibio* and *Thereva* in the sense of Fabricius.<sup>55</sup>

### Answering the Nomenclatural Challenge in Diptera

Meigen was the first entomologist to specialize on Diptera, whose successful efforts to describe species and improve their classification have led many to consider Meigen the father of dipterology (Lindroth 1973). Meigen's dipterological

works began in 1800 with the controversial *Nouvelle Classification des Mouches à Deux Ailes*<sup>56</sup> and continued with a genus-level revision of "European two-winged insects"<sup>57</sup> (Meigen 1803, Meigen 1804a-b). In his *Versuch einer neuen Gattungs Eintheilung* in 1803, Meigen revised all of Diptera at the genus level and redescribed *Thereva* and *Bibio*. The generic diagnoses and the species he included in *Bibio* ("*Bibio nobilitata, anilis, lugubris etc. Fabr.*") and *Thereva* ("*Thereva hemiptera, affinis etc. Fabr.*") reflect Meigen's use of the Fabrician classification for Diptera in 1803. The characters Meigen established in this work, however, such as the attitude of the wings at rest and the number of ocelli, indicate an early departure from the Fabrician emphasis on mouthparts and move toward the multicharacter philosophy promoted by Latreille.

Meigen elaborated on his 1804 work with his *Klassifikation und Beschreibung der europäischen Zweiflügeligen Insekten*, a thorough and critical review of dipteran taxonomy since the twelfth edition of *Systema Naturae* by Linnaeus in 1772. Meigen gave a tabular synopsis of classifications developed by Linnaeus, De Geer, Fabricius, and Latreille including the generic descriptions by the authors and the number of species each author considered in the genus. In this way, he identified the Fabrician equivalent of *Thereva* Latreille as the "*M[usca] depressae*" group of Latreille, but Meigen did not use the genus name *Thereva* for any species in 1804. Meigen did, however, describe and redescribe stiletto fly taxa under *Bibio*, giving distributional data, synonymies, and some transliterations of original descriptions. He described two stiletto fly taxa, "*Bibio lugubris*"<sup>58</sup> and "*Bibio fulva*,"<sup>59</sup> and included 13 species in *Bibio*. Throughout this work, Meigen refers to dipteran genera using scientific and colloquial names; he called his *Bibio* "*Stiletfliege*." This is the first use of the name "stiletto flies" for these species, which has been widely adopted and popularized in modern literature concerning Diptera.<sup>60</sup>

From 1818 to 1838, the seven volumes of Meigen's *Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten* were published, which "laid the foundation for all further systematic work on Diptera" (Evenhuis 1997b) including the systematics of the genus *Thereva*. In the third volume of this work, Meigen used the name *Thereva* for the first time (Meigen 1820), but in the sense of Latreille, not Fabricius. After giving a detailed diagnosis of the genus *Thereva*,

Meigen acknowledged that *Bibio* was first used by Geoffroy and that Fabricius unnecessarily replaced *Bibio* with the genus-group name *Hirtea*.<sup>61</sup> This apparent misuse of *Bibio* by Fabricius gave Meigen sufficient motivation to accept *Thereva* of Latreille as the valid genus name for species Meigen had formerly considered *Bibio*, and Meigen proposed ten new species-group names in combination with *Thereva*. Although he did not designate any of these 21 Palaearctic species as the type species of *Thereva*, Meigen did include *Thereva plebeja* Linnaeus in his generic circumscription.

Furthermore, Meigen proposed the group name Xylotomae<sup>62</sup> for *Thereva*, which he defined in the introduction to this volume (pg. VIII) as follows:

Fühler vorgestreckt [sic], an der Wurzel genähert, dreigliederig: drittes Glied ungeringelt. Rüssel verborgen. Drei Punktaugen. Hinterleib siebenringelig, kegelförmig. Schwinger unbedeckt [sic]. Flügel halb offen. Zwei Afterklauen.

Here, Meigen identified the number of tarsal pulvilli ("Afterklauen") as an important taxonomic character for Xylotomae and other groups of modern "lower Brachycera" as seen in Latreille's earlier descriptions of the same taxa (Latreille 1804, Latreille 1809, Latreille 1810). Meigen used the elongate, attenuated shape of the antenna to separate Xylotomae from Mydasii, a group including only the genus *Mydas*<sup>63</sup>, which has a clavate ("keulformig") antenna. Notwithstanding his disagreement with Latreille concerning generic relationships (Latreille 1810, Latreille 1825), the diagnosis Meigen gave for Xylotomae in 1820 is nearly a direct translation of Latreille's original diagnosis of *Thereva* in 1797.

#### EMERGENCE AND DEVELOPMENT OF THEREVIDAE (1821–1909)

##### *The Group Xylotomae Meigen, 1820*

Christian Rudolph Wilhelm Wiedemann<sup>64</sup> authored the first major publication on Diptera after Meigen, *Diptera Exotica*. Because the classification of Meigen was neither universally nor immediately adopted, Wiedemann began most texts in which *Thereva* is featured with a list of equivalents between his names and those of the Fabrician or Fallénian system. Wiedemann followed the classi-

fication of Meigen for *Thereva* in *Diptera Exotica*, placing *Thereva* and *Chiromyza*<sup>65</sup> in Xylotomae. Additionally, Wiedemann proposed species-group names in *Bibio* that are modern bibionids (Wiedemann 1821), and he correctly used *Phasia* for tachinid taxa by 1830 (Fig. 1). He proposed 16 species-group names in *Thereva* for taxa collected from all six biogeographical regions except the Neotropical Region during 1817, 1821, 1824, 1828, and 1830; and he described or redescribed North American species from specimens collected by Thomas Say<sup>66</sup> (Evenhuis 1997b).

Johan Wilhelm Zetterstedt,<sup>67</sup> a student of and later successor to Fallén as professor at Lund, focused on collecting and identifying his local Swedish fauna, describing four species of *Thereva* and proposing the genus *Psilocephala* in his *Insecta Lapponica*, 1838. In his diagnosis for *Thereva* on page 522, Zetterstedt gives what may be the first reference to the 20-segmented appearance of stiletto fly larvae: "*Larvae in terra degunt, 20-annulatae, serpentiformes . . .*" (Zetterstedt 1838). The classification Zetterstedt used in this paper featured names selected from a melange of primary sources, ranging from Latreille and Fabricius to Meigen and Fallén. Whereas Zetterstedt used *Phasia* of Latreille for *Thereva*, *sensu* Fallén, Zetterstedt chose *Hirtea* of Fabricius over *Bibio*, *sensu* Meigen. Zetterstedt used *Thereva*, *sensu* Latreille and Meigen, but he placed *Thereva* in the "family" Anthracides of Fallén with *Anthrax* (Zetterstedt 1838).<sup>68</sup>

Practically hidden in a note following his species descriptions for *Thereva*, Zetterstedt proposed the genus-group name *Psilocephala*.<sup>69</sup>

Species haec pulchra et distinctissima, una cum *Thereva imberbil*[<sup>70</sup>] et *Th. confini*[<sup>71</sup>] Fall. Proprium forte constituunt genus, cui nomen *Psilocephala* ob glabritiem capitis propono.

The dichotomous contrast Zetterstedt established with this genus concept, between stiletto flies with mostly pilose (i.e., *Thereva*) or mostly bare (i.e., *Psilocephala*) heads, immediately fixed two default repositories for species-group names given to stiletto fly taxa. As a result, the number of species placed in *Psilocephala* increased steadily until the late 1960s (Fig. 2), approaching the species richness of *Thereva*.

Following the basic classification presented by Meigen in 1820, Pierre Macquart<sup>72</sup> gradually expanded the circumscription of the group Xylo-

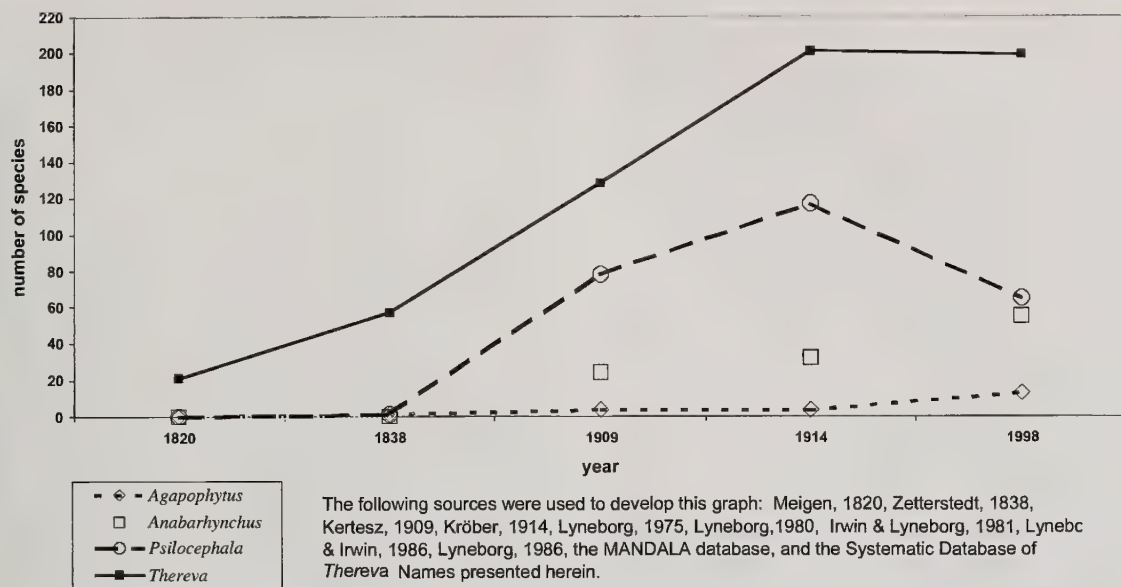


Figure 2. Changes in the species circumscriptions of *Thereva*, *Psilocephala*, *Anabarhynchus*, and *Agapophytus* as a result of changing genus concepts and descriptions of new species.

tomae. Macquart started in 1826 with a monotypic *Xylotomae* for *Thereva*, and later, drawing from Wiedemann's classification in *Diptera Exotica*, had included *Chiromyza* and *Ruppellia*<sup>73</sup> by 1834. Macquart erected the monotypic genus *Exapata*<sup>74</sup> within *Xylotomae* in 1840, which was synonymized with *Thereva* in 1909 (Kertész 1909). Macquart's study of wing venation in dipteran classification led him to include *Xestomyza*<sup>75</sup> with *Thereva* in *Xylotomae*, in 1840 (Dufour 1850). *Xestomyza*, the second oldest genus-group name in modern Therevidae, was classified prior to 1909 in "Bombyliarii" (Agassiz 1846a, Dufour 1850) due to antennal similarities with *Ploas*<sup>76</sup> (Dufour 1850).

Macquart promoted the biology of flies in *Histoire naturelle des insectes*, published in two volumes in 1834 and 1835, providing data on the biology and geography of stiletto flies in this work and in *Diptères exotiques nouveaux ou peu connus*. Macquart's summaries concerning the biology of taxonomic groups of flies complemented Latreille's entries for the *Dictionnaire Classique d'Histoire Naturelle* in 1830, which also provided a summary of *Thereva* taxonomy and biology. Macquart compiled the scattered biological information on stiletto flies, including uncommonly recorded observations on oviposition and pupation (Macquart 1834). After describing seven species from

the Australasian and Oceanian Region in *Diptères exotiques* as *Thereva*, Macquart later established the genera *Anabarhynchus*<sup>77</sup> and *Ectinorhynchus*<sup>78</sup> for these species. Other workers continued to propose names for Australasian species in *Thereva* that were later moved to genera proposed by Macquart, such that the unique diversity of the Australian stiletto fly fauna was not reflected by genus-level nomenclature until the mid-1900s. Furthermore, as early as 1840, Macquart was aware that adult stiletto flies were not predaceous. Referring to species of *Thereva* and *Xestomyza*, he stated on page 65 of his *Histoire naturelle*:

Ces insectes habitent les bois et les prairies, et quoique leur nom indique qu'ils font la chasse aux animaux, ils paraissent vivre beaucoup plus du suc des fleurs.

Various authors, from Williston in 1908 to Séguin in 1932, have consistently, but erroneously, stated that adult stiletto flies feed on other insects (Verrall 1909) in spite of these early assertions by Macquart to the contrary.<sup>79</sup>

In 1846, Jean Louis Agassiz<sup>80</sup> compiled the names relevant to the genera of *Xylotomae* in Part Four of his database of genus-group and family-group names for all animal taxa, *Nomenclator Zoologicus*, and the scope of this work shows how

dramatically the number of names for animal taxa had increased since Linnaeus' *Systema Naturae*. Agassiz listed the genus-group and family-group names of Diptera with their attribution and etymologies; and he classified "*Thereua* [sic]" (of Latreille), *Exapata* (1846: 14), *Psilocephala* (1846: 32), and "*Rüppellia* [sic]" (1846: 34) as genera of Xylotomae. Agassiz attributed the genus-group name "*Thereva*" to Fallén, 1820, and gives *Phasia* as its junior synonym, indicating that the nomenclatural disagreements of the late 1700s had not yet been resolved. Agassiz classified *Xestomyza* as "*Bombyliarii*" (Agassiz 1846: 41) and spelled *Thereva*, of Latreille, "*Thereua Latr.*" (Agassiz 1846a: 39), which may have encouraged the use of "*Thereua*" as an alternative spelling for "*Thereva*."<sup>81</sup> Although specific reasons why certain dipterists publishing after 1846 may have chosen "*Thereua*" over "*Thereva*" are unclear, it has been suggested that it was based on an "irrelevant philological argument" (Osten Sacken 1903). Nevertheless, one of these dipterists who accepted and used the spelling "*Thereua*" was a prolific describer of *Thereva* species during the mid-1800s.

A significant contributor to stiletto fly system-

atics working in Great Britain, Francis Walker,<sup>82</sup> used *Thereva* in a less restricted sense than Macquart and described 29 species in this genus from all biogeographical regions except the Afrotropical Region. Walker, whose prolific and hastily composed taxonomic works are infamous in entomology, first classified *Thereva* within the "family" Xylotomae in 1848. In 1851, Walker placed *Thereva* in "*Bombylidae* [sic]", and reverted to Xylotomae in *Insecta Saundersiana*, 1852. In all subsequent works with new species-group names proposed in *Thereva* (from 1857 to 1865), Walker classified *Thereva* in the subfamily "Therevites," family "Bombylidae."<sup>87</sup>

This classification was unique to Walker, and he was one of only three workers after 1860 who did not use some derivation of the name *Thereva* for the family in which *Thereva* was classified. In 1861, Luigi Bellardi<sup>84</sup> proposed two species-group names under *Thereva* in his *Saggio di Ditterologia Messicana* and classified *Thereva* with *Psilocephala* in Xylotomae. Rudolph Amando Philippi<sup>85</sup> published new names for Chilean stiletto flies in 1865, also classifying *Thereva* in Xylotomae, but proposing the genus *Pachyrrhiza*<sup>86</sup>

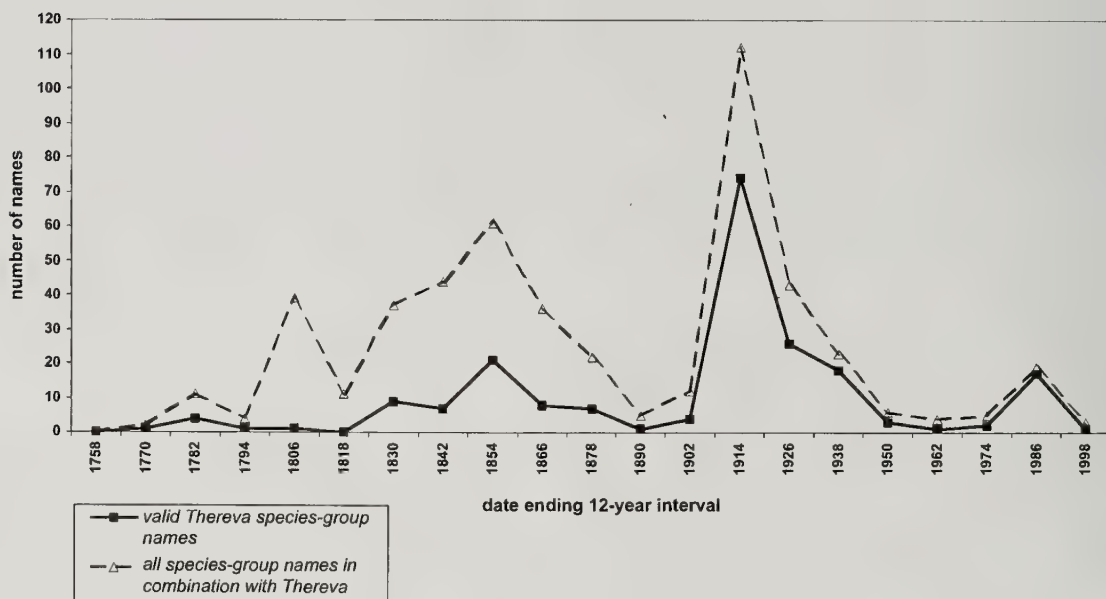


Figure 3. "Activity plot" of names: number of all species-group names used in combination with *Thereva* compared to number of valid *Thereva* species-group names, measured as independent values (from 1758 to 1998) taken for 12-year intervals.

in "Asilici" of Latreille. In 1856, however, Camillo Rondani<sup>87</sup> proposed *Dialineura*<sup>88</sup> as a genus under "THEREVINA."

### *The Family Therevidae Burmeister, 1837*

Although the family-group name "Therevidae" was used in 1837 by Burmeister,<sup>89</sup> Hermann Loew<sup>90</sup> began his studies of stiletto fly taxa in 1840 using the "family" name Xylotomae. Along with Macquart and Walker, Loew contributed considerably to the first of two major surges of names in the history of *Thereva* (Fig. 3), proposing species-group names for 49 Nearctic, Palaearctic, and Afrotropical stiletto flies from 1840 to 1876. Loew abandoned the use of names above the genus group in his subsequent works on stiletto fly taxa and replaced the spelling "Thereva" with "Thereua" after 1840.<sup>91</sup> His overall contribution to the taxonomy of Diptera was exceptional, as Loew proficiently employed his skills in "descriptive dipterology" (Osten Sacken 1903) during his studies of *Thereva* species.<sup>92</sup> Loew's prolific work on Diptera, combined with the efforts of Daniel Coquillett,<sup>93</sup> constitute the majority of the taxonomic work on Nearctic stiletto flies between 1850 and 1911.

Taxonomic study of *Thereva* and other stiletto fly genera continued throughout the remainder of the 1800s under the family-group name Therevidae. Theodor Becker<sup>94</sup> was among the few other dipterists who proposed new species-group names in *Thereva* during the latter part of this period. The four other authors in the early 1900s are Shyōnen Matsumura<sup>95</sup> in 1905, Mario Bezzi<sup>96</sup> in 1906, P. Gabriel Strobl<sup>97</sup> in 1906, and George Henry Verrall<sup>98</sup> in 1908. Becker's greater contribution to the systematics of stiletto flies, however, stems from a work published in 1912, in which he delineated subfamilial groups within Therevidae.

Between 1890 and 1909, nomenclatural activity in the genus *Thereva* had reduced considerably (Fig. 3), with most works featuring *Thereva* centered on the classification, identification, and biology of Diptera. *The Standard Natural History* (Kingsley 1884), *Dr. Johannes Leunis Synopsis der Thierkunde* (Ludwig 1886), and *An Account of British Flies (Diptera)* (Theobald 1892) gave notes in their sections devoted to Diptera on stiletto fly biology while concentrating on characters for the identification of flies in this "small family" (Kingsley 1884). Emile Gobert<sup>99</sup> authored *Cata-*

*logue des Diptères de France*, a checklist of species recorded from France in which he gave synonymies and species under valid genus-group names. Gobert listed *Xestomyza* and *Thereva* as the two genera of Therevidae found in France, reducing *Dialineura* and *Psilocephala* to subgenera of *Thereva* (Gobert 1887). Ferdinand Kowarz<sup>100</sup> produced a similar work in 1894, *Catalogus insectorum faunae bohemicae*, listing species-group names of "Thereuidae [sic]" under "*Thereua* [sic]" or *Psilocephala*. In 1908, Samuel Williston<sup>101</sup> produced the third edition of the *Manual of North American Diptera*, in which he gave a key to the North American genera and limited biological and taxonomic data on stiletto flies.<sup>102</sup> William Lundbeck<sup>103</sup> and George Verrall authored faunistic works on the Diptera of Denmark (Lundbeck 1908) and Great Britain (Verrall 1909), in which they provided nomenclatural and taxonomic discussions, biological information, diagnoses, and keys to their small stiletto fly faunas.<sup>104</sup> The works of these authors continued the narrow stream of summaries concerning the natural history and taxonomic knowledge on *Thereva* after the usage of *Thereva* was restricted to stiletto flies.

Comprehensive nomenclatural databases were also developed during this lull in nomenclatural activity, beginning with the efforts of Osten Sacken<sup>105</sup> concerning the North American dipteran fauna. Osten Sacken, who provided Loew with Nearctic specimens of *Thereva* that Loew described, established dipterology in the United States between the years 1856 and 1877 (Smith 1978). As a major goal in this endeavor, Osten Sacken compiled the names of North American Diptera in 1858, placing *Thereva* in Xylotomae with *Scenopinus*.<sup>106</sup> In 1878, he produced a more detailed and complete catalog in the same general design, this time classifying *Thereva* in the family Therevidae with *Psilocephala*, *Xestomyza*, and *Tabuda*.<sup>107</sup> The number of valid species-group names increased from seventeen (not counting the two species of *Scenopinus*) in Osten Sacken's *Catalog of the Described Diptera of North America* (Osten Sacken 1858) to 71 in a revised iteration of this catalog (Aldrich 1905), reflecting the number of names for new taxa mostly described by Loew and Coquillett.

Two important dipterological works were published in the late 1800s that provided nomenclatural summaries for European stiletto fly taxa. The first was a faunistic work, *Dipterologiae Italicae*

*podromus*, by Camillo Rondani in 1856. This work emphasized taxonomic groups of Diptera at generic and suprageneric levels; Rondani gave species names as types ("Spec: Typ") for genera he lists under supergeneric names (identified by the label "Stirps"). Rondani gave "*Musca Anilis* Lin." as the type species of "*DIALINEURA* Mihi" and "*Musca Plebeja* Lin." as the type species of "*THEREVA* Latr." These two genera were listed under "Stirps XXXV. THEREVINA Rndn.;" but in this work, Rondani does not mention *Psilocephala*, a genus name for stiletto flies proposed by Zetterstedt in 1838. The second nomenclatural summary was *Fauna Austriaca*, in which I. Rudolph Schiner<sup>108</sup> compiled names and biological data on the European Diptera. Schiner concentrated on providing species descriptions for Austrian and German taxa and provided detailed summaries of biological and morphological data concerning Diptera, including identification keys relevant to the Austrian fauna. Schiner treated *Xestomyza*, *Thereva*, and *Exapata* as valid genus names, listing *Dialineura* and *Psilocephala* as synonyms of *Thereva*. Schiner considered *Baryphora*<sup>109</sup> and *Cionophora*<sup>110</sup>, presently monotypic genera in the subfamily Therevinae, synonyms of *Xestomyza* and considered *Exapata* a valid monotypic European genus of stiletto flies (Schiner 1860).

Complementary to the revised iteration of North American Diptera, authored by Aldrich<sup>111</sup> in 1905, Bezzi<sup>112</sup> authored the second volume on "*Orthorrhapha Brachycera*" of the *Katalog der Paläarktischen Dipteren*, which featured Therevidae (Bezzi 1903). In this nomenclatural database, *Thereva* is given as a genus of Therevidae with two junior synonyms: "*Bibio* Fabr. (nec. Geoffr.)" and "*Dialineura* Rond." The 64 valid species-group names for *Thereva* are subtended by their synonyms, which included misidentifications of species, and a comprehensive list of references to these names is provided with each name. Homonyms of these names are indicated by "nec." and geographic distributions are indicated in the margins next to each name. Both the Palaearctic and North American catalogs provide similar information, but Aldrich in 1905 also includes notes on some of the references, as did Osten Sacken in 1858 and 1878. However, *Thereva* species-group names for the Afrotropical, Australian, Neotropical, and Oriental regions were not covered in these catalogs. A diversity of publications dating back to the early 1800s would also

have to be examined at this time to assess the full nomenclature of *Thereva* and Therevidae.

### *Answering the Nomenclatural Challenge in Therevidae*

In answer to the growing need for a database of all taxonomic names of Diptera, Kalman Kertész<sup>113</sup> began a work of immense proportions entitled *Catalogus Dipteriorum hucusque descriptorum*. By 1909, he had completed the fifth volume, which included the names of the family Therevidae. Using a format similar to the *Katalog der Paläarktischen Dipteren*, Kertész provided the first worldwide database of species-group and genus-group names in Therevidae, listing 276 valid species-group names for Therevidae, 128 valid species-group names for *Thereva* (Fig. 2) and 16 valid genus-group names for Therevidae. However, this work still did not include all species-group names relevant to the nomenclature of *Thereva*. The species-group names combined with *Thereva* that referred to non-stiletto fly taxa, partially represented in the *Katalog Paläarktischen Dipteren*, are altogether absent: *Catalogus Dipteriorum*, including the section that would have included Tachinidae, was never completed.

A detailed assessment describing the impact of *Catalogus Dipteriorum* on the systematics of *Thereva* is beyond the scope of this study, but it is certain that this resource was valued by dipterists as they refocused their attention from their local faunas to the worldwide fauna. A noteworthy feature of this worldwide database is that it reveals present taxonomic circumscriptions for the world fauna. This work listed all the genus-group names in Therevidae since Meigen's 1820 faunistic work. For example, *Pachyrrhiza*,<sup>114</sup> a genus-group name erected for a Chilean taxon, was proposed within "Asilici" in 1865 and appeared for the first time as a member of Therevidae in *Catalogus Dipteriorum*. Also, the consensus that had to be obtained in order to prepare and present this work promoted critical examination of taxonomic concepts and classification schemes. The synonymies of the genus-group name *Baryphora*, for example, were presented to the scientific community with uncertainty, as indicated by a question mark ("?Pachyrrhiza PHIL." and "?Tabuda WALK."). Furthermore, the definitive taxonomic assertions presented in this and similar large-scale works must have encouraged a wide audience of au-

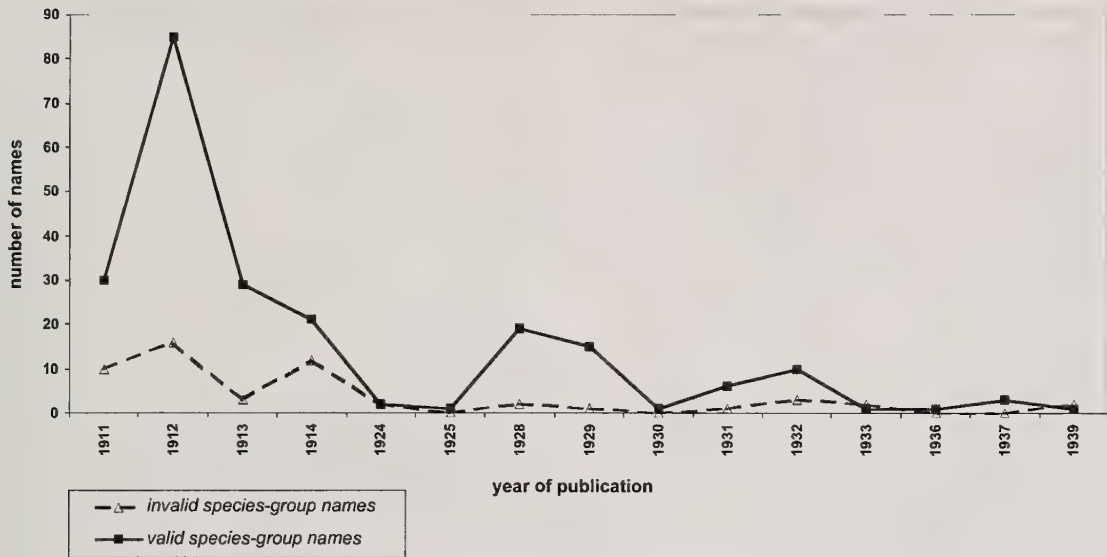


Figure 4. "Activity plot" for Otto Kröber: species-group names Kröber proposed in *Thereva*, illustrating his intensive taxonomic efforts between 1911 and 1914 and the low degree of synonymy (i.e., taxa first described by Kröber) among his species.

thors to evaluate these hypotheses. This phenomenon is evident in the taxonomic works on Diptera following 1820 (e.g., Meigen's works), on Insecta following 1804 (e.g., Latreille's works) and 1775 (e.g., Fabricius' works), and on Animalia following 1758 (e.g., Linnaeus' works).

Kertész's *Catalogus Dipteriorum* marked a turning point in the systematics of Diptera. This work was the last major nomenclatural work on Diptera that gave exhaustive lists of references to species-group names and all synonyms, including misidentifications. The accumulation of nomenclatural data had already surpassed the confines of single book treatments, and these data had to be neglected in later works for the sake of clarity and effectiveness in guiding name usage. The apparent focus of nomenclatural works on Diptera after *Catalogus Dipteriorum* on current usage and type specimen information for species-group names was reflective of practical concerns as opposed to revealing a disregard of the history of taxonomic names (Osten Sacken 1858, Aldrich 1905). The nomenclature of *Thereva* and taxonomic hypotheses concerning the family Therevidae that were once dealt with in the context of Diptera had become too complex at such a broad scale and required specialized efforts to gain further progress.

#### TOWARDS A PHYLOGENETIC UNDERSTANDING OF THEREVIDAE (1910–1999)

##### *From Taxonomy to Biology*

The first specialist on the family Therevidae was Otto Kröber,<sup>115</sup> who published his first paper on the Therevidae of Central and South America in 1911. He was an alpha-level taxonomist who concentrated on faunistic revisions of Tabanidae, Conopidae, Scenopinidae (under the name *Omphraliden*<sup>116</sup> in publications by Kröber), and Therevidae. However, his most important contributions to work on Therevidae stem from Kröber's efforts to compile and organize all biological and taxonomic data on the family.

Kröber's motives are apparent in the first sentence of his 1911 paper, in which he explains his desire to have the taxonomic information concerning the stiletto flies of Central and South America available in a comprehensive work:

Noch nie ist über die Thereviden Süd- und Mittel-Amerikas zusammenhängend gearbeitet worden, was sich z. T. aus der Schwierigkeit dieser Gruppe erklärt, z. T. wohl auch daraus, dass es sich hier um verhältnismässig seltene Dipteren handelt.

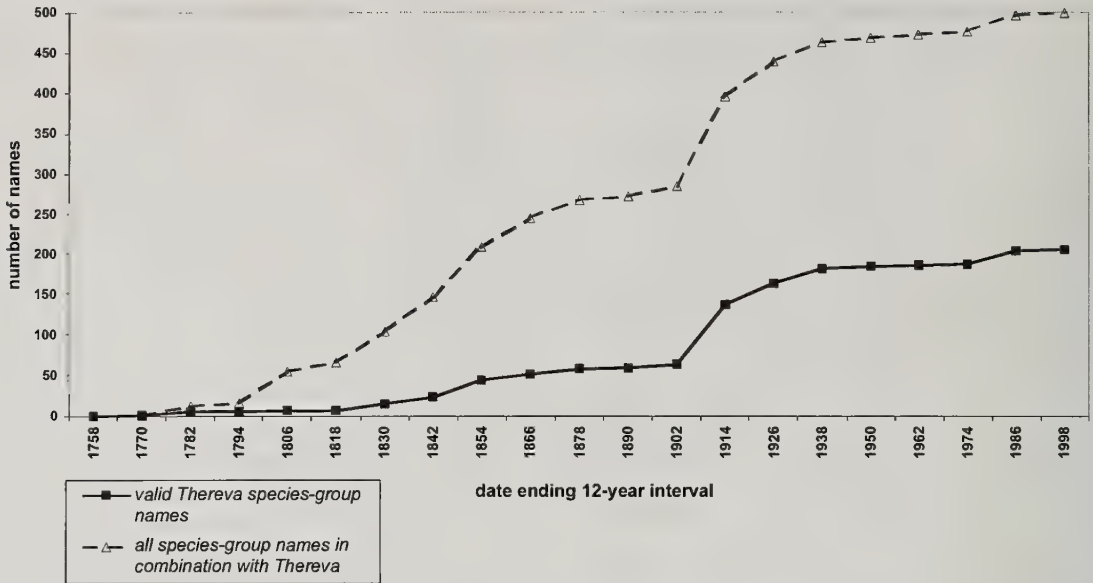


Figure 5. "Accumulation plot" of names: number of all species-group names used in combination with *Thereva* compared to number of valid *Thereva* species-group names, measured as a cumulative values (from 1758 to 1998) taken for 12-year intervals.

Kröber's publications on Therevidae remain primary sources used in identifying the majority of species in Therevidae.

Kröber's most important work in this respect is Fascicle 148 of Wytzman's *Genera Insectorum*, which was the first worldwide revision of the family Therevidae. Having just completed a revision of the Palaearctic and Afrotropical Therevidae, published from 1912 to 1913 in *Deutsche Entomologische Zeitschrift*, Kröber was able to incorporate the data on stiletto flies from other less diverse regions to generate a single reference. In *Genera Insectorum*, Kröber focused on three major products: a nomenclatural database, identification keys from the genera to species, and a summary of all additional data on stiletto flies. This summary included data with references on the ecology, physiology, anatomy, and behavior of stiletto flies at all life stages as well as detailed information concerning genus-level characterizations.

Kröber's impact on the systematics of *Thereva* is seen mainly in his descriptions of new taxa (see Figs. 3 & 4), but also involves his morphological studies of the female frons. He used the appearance of the frontal callus to describe species-level taxonomic characters and delineated "6 natürliche" groups of *Thereva* based on callus morphol-

ogy in 1912. Kröber later expanded the definitions of these groups to include leg and wing characters and eventually defined over ten groups (Kröber 1925) that, unfortunately, lacked perfect correspondence between males and females (Séguy 1926).

Kröber gave a diagnosis for the genus *Thereva* in his worldwide revision of Therevidae in 1913 that is virtually indistinguishable from the diagnoses present in his other works featuring this genus. It reveals more morphological details than the diagnoses of authors in the 1800s but mainly describes general character states found in other genera, referring to characters with little cohesive value for the species in Kröber's *Thereva*:

Fühler normal gebaut; der Endgriffel nicht immer terminal stehend. Rüssel nicht vorstehend. Augen beim Männchen stets zusammenstossend. Untergesicht stets dicht behaart. Stirn der Weibchen meist breit, in wenigen Fällen schmaler als die Breite der Ocellen. Die Stirn ist tomentiert oder mit einer glänzende Schwielen versehen. Im ersten Fall ist die Stirn ein- oder zweifarbig oder sie trägt (namentlich bei amerikanischen Arten) einen oder zwei sammet-schwarze Flecke. Die glänzende Schwielen ist selten unter Pubescenz verborgen. Oft besteht

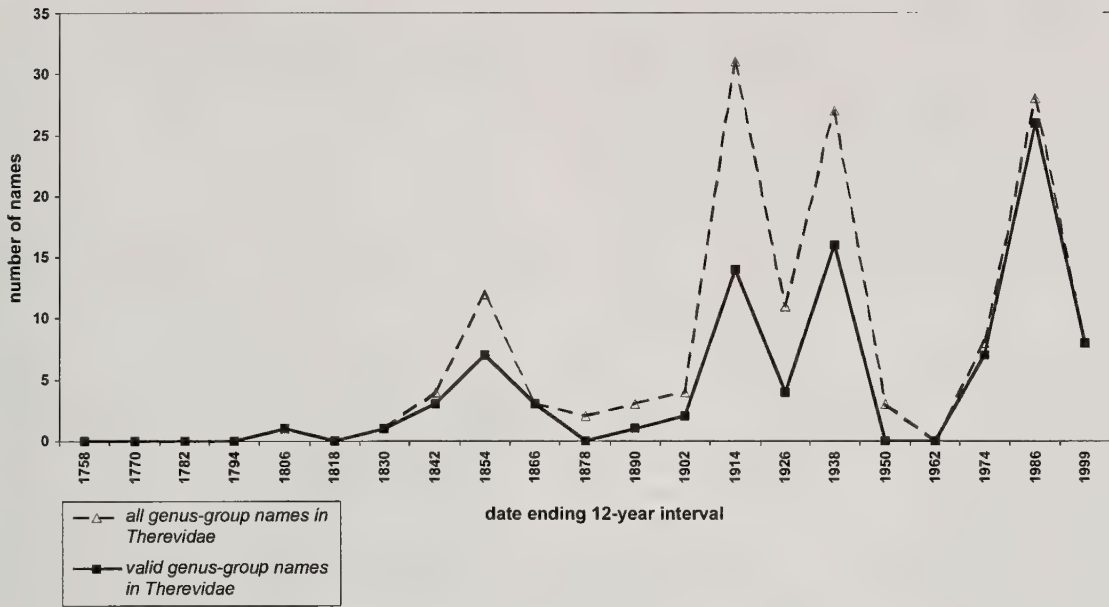


Figure 6. "Activity plot" of names: number of all genus-group names compared to number of valid species-group names in Therevidae, measured as independent values (from 1758 to 1998) taken for 12-year intervals.

sie aus zwei nebeneinanderliegenden Flecken oder füllt Stirn und Scheitel vollkommen aus. Der Hinterkopf trägt einen Borstenkranz, meist von schwarzer Färbung. Alle grösseren Arten zeichnen sich durch Schlankheit aus, während die kleineren oft gedrungen und plump erscheinen. Die männlichen Genitalien sind fast stets unauffällig klein. Der Borstenkranz am Ende der Legeröhre findet sich bei allen Arten mehr oder weniger deutlich. Das Geäder der Flügel ist normal. Die vierte Hinterrandzelle ist ebenso oft geschlossen als offen. Oft sind die Flügel gefleckt oder doch mit einem Bogenwisch versehen.

The closest that Kröber came in defining characters unique to *Thereva* is describing the frontal callus of the females, but he also referred to the "glänzende Schwielen" and "sammetschwarze Flecken" of certain species of *Psilocephala* (Kröber 1913d). Further evidence of the difficulty Kröber had in defining the genus *Thereva* is in its placement at the bottom of his dichotomous key, which can also be seen in recent keys for Therevidae (Lyneborg 1976a, Zaitsev 1988, Majer 1997). Several species that Kröber then included in *Thereva* have been placed in genera proposed after 1976 (*Acrosathe*,<sup>117</sup> *Ammoniaos*,<sup>118</sup> *Irwinella*,<sup>119</sup> *Pseudotherava*,<sup>120</sup> and *Spiriverpa*<sup>121</sup>), and two much older

Nearctic genera, *Cyclotelus*<sup>122</sup> and *Ozodicomyia*,<sup>123</sup> currently include species that Kröber considered within *Thereva* (Cole 1923, Irwin & Lyneborg, 1981a-b).

Nevertheless, Kröber managed to nearly double the number of described species in *Thereva* (Figs. 3 & 5) and greatly enhanced the taxonomic knowledge of Therevidae in general. Between 1911 and 1937, Kröber described 279 species of Therevidae. Two hundred and fifty-five of these species-group names are currently valid, which indicates that the taxa he was describing were previously unknown (Fig. 4). Until 1909, there were only 27 genera of Therevidae described, which contributed to the disproportionate use of *Thereva* from 1820 to 1900 for stiletto fly taxa. However, Kröber himself defined 23 genera between 1911 and 1914, fifteen of which are currently valid, and 12 genera after 1914, nine of which are valid (Fig. 6). The works of Kröber were influential and informative resources for dipterists, such as Frank Cole<sup>124</sup> and John Mann,<sup>125</sup> in their systematics works on Therevidae after 1913 (Cole 1923, Mann 1928).

Cole produced a revision of North American Therevidae in 1923 that was based on his Masters thesis, written in 1919. Cole gives detailed synopses of morphological characters and terminolo-

gy, biology and behavior of the adults, larval ecology and morphology, geographic distribution and geological distribution. Although Kröber had previously described differences in external male terminalia among genera (Kröber 1913), Cole provided the first illustrations of the internal structures and predicted the future use of these structures in species-level taxonomy.<sup>126</sup> Among the 38 species-group names he proposed for stiletto fly taxa, Cole erected nineteen species-group names in combination with *Thereva* between 1923 and 1965 (four of which name valid species currently in *Thereva*). Cole's research findings on Therevidae, summarized and presented in *The Flies of Western North America* (Cole 1969) and *An Introduction to the Study of Insects* (Borror et al. 1989), remain an important primary resource in studies of Nearctic stiletto fly species.

John Mann produced an extensive three-part series entitled "Revisional Notes on Australian Therevidae" published in 1928, 1929, and 1933. He provided a summary of data on Therevidae similar to Cole (1923) and mentioned that the genus *Thereva* is not part of the Australian fauna. Mann listed twelve species of *Psilocephala* in part three of this work, although *Psilocephala* is no longer considered part of the Australian fauna (Irwin & Lyneborg 1989). He did not acknowledge the importance of male terminalia in the systematics of Therevidae, instead relying on external morphology and color variation in his attempts to define genera that could "be regarded as satisfactory" (Mann 1928: 151). Mann noted the efforts of White<sup>127</sup> and G.H. Hardy<sup>128</sup> in studying the fauna of Australia, and he mentioned that Hardy divided the Australian stiletto fly fauna into two groups in 1921 (Mann 1928).

Other dipterists continued to increase the taxonomic knowledge of *Thereva* in poorly-known regions, but they were less active in these pursuits than Kröber, Cole, and Mann. In 1917 and 1920, Brunetti<sup>129</sup> published species-group names in *Thereva* for certain specimens housed at the Indian Museum, complemented by the efforts of Richard Frey<sup>130</sup> in 1921 at the Museum of Zoology in Helsinki. In the *Diptera of Patagonia and Chile*, 1932, John Malloch<sup>131</sup> wrote a limited treatment of the stiletto fly fauna, naming a new species of Neotropical *Thereva* and providing a synopsis of the status of other South American members of *Thereva*. In 1937 and 1938, D. Elmo Hardy<sup>132</sup> and Stanley Bromley,<sup>133</sup> both of whom also published

on Asilidae, produced species descriptions of Nearctic stiletto flies. Two these taxa are valid species of *Thereva*.

### *From Biology to Phylogeny*

Detailed studies of the immature stages of Diptera in the 1950s and the appearance of the first faunistic guides to Diptera fully extended stiletto fly systematics beyond the realm of adult morphology. Data had slowly accumulated on the biology and ecology of the "imperfect" stages of stiletto flies since the first published association between larval and adult stiletto flies by De Geer in 1776 and the first descriptions of stiletto fly larvae and pupae. Observations of adult and larval stiletto flies in the field were recorded for several species after 1779 that included biological notes on species of *Thereva* in the Nearctic and Palaearctic regions (Verrall 1909, Kröber 1913d, Cole 1923). Midway through Kröber's efforts in describing stiletto fly taxa, works featuring Therevidae were produced that reflected a growing interest in ecological and biological characterizations of Diptera and the utilization of these characterizations in classifications. Although the compilations on Diptera by Macquart in the 1830s and by other authors in the early 1900s served to broaden the scope of stiletto fly systematics, the second surge of works featuring the natural history of stiletto flies during the mid-1900s was key in forging the link between morphological, biological, and phylogenetic studies of Therevidae.

An example of this genre of publications is the chapter on Diptera in the *Handbuch der Zoologie* (Hendel & Beier 1938), which features Therevidae in discussions concerning the morphology, anatomy, and classification of Diptera. The surveys of Diptera conducted to create the *Handbuch* yielded lists of families sharing a character state for the adult or immature stages, and these characters were used to characterize the taxonomic groupings presented for Diptera. Anatomical and biological data on adults and larvae of Therevidae, reiterated within the annotated classification table of Diptera, were used to group Therevidae in the "*1te Familiengruppe der Heterodactyla*" with Apioceridae and "Omphralidae"<sup>134</sup> (Hendel & Beier 1938).

The classification of Therevidae followed by Hendel & Beier in this work shows elaboration on the classifications of previous authors, such as Verrall, and is summarized as follows:

Diptera ("Ordnung der Pterygonea"): Brachycera = "Fliegen" [in contrast to Nematocera = "Mücken"] ("Unterordnung"): Orthorrhapha ("Kohorte"): Heterodactyla ("Familienreihe"): Therevoidea ("Superfamilie"): Therevidae ("Familie").

The diagnosis Hendel & Beier give for their superfamily Therevoidea reflects their use of larval characters in classification of Diptera:

Superfamilie: THEREVOIDEA. Präfrons konkav, von den Ästen der Präfrontal-naht hufeisenförmig umgeben. Taster gegen die Präfrons aufgeschlagen. Prothorax (Antepnotum) nicht oder nur wenig vortend. Prästernalbrücke vorhanden.—Larven sekundär geringelt, scheinbar aus 20 Segmenten bestehend, mit freiem, hinten nicht in den Thorax versenktem Kopf. Hinterstigma am vorletzten Segment gelegen.

In "Therevoidea," the authors included Therevidae, "Omphralidae (Scenopinidae)," and "Apioceridae" (with two subfamilies: "Apiocerinae" and "Rhaphiomydinae") although they admit that the larvae and pupae of "Apioceridae" were "unbekannt" (Hendel & Beier 1938: 1921).

The writings of Eugène Séguéy<sup>136</sup> on Therevidae in 1926 for the series *Faune de France* and in 1950 for the *Encyclopédie Entomologique*, as part of "*La Biologie des Diptères*," present a treatment of Diptera with more detailed species-level information on Therevidae and an emphasis on the natural history of Diptera. In *Faune de France*, Séguéy provided keys that he had adapted from the works of Becker to the 7 genera and 31 species of stiletto flies (with 21 of these species classified as *Thereva*) recognized in 1926 as occurring in France. Written and illustrated descriptions and diagnoses, geographical and temporal distributions of species, and adult and larval habitats are given for Therevidae, including figures of the larva and pupa of *Thereva nobilitata* (Fabricius). In "*La Biologie des Diptères*," Séguéy featured Therevidae under several subject headings, with most of these subjects relevant to larvae or pupae (Séguéy 1950). For example, Séguéy noted that the larvae of asilids, empidids, mydids, tabanids, and therevids "*attaquent sans distinction les larves qui vivent dans le même milieu qu'elles*" (Séguéy 1950: 394) under the subject heading "*Diptères Entomophiles*."

In Australia, Kathleen English<sup>136</sup> improved

upon the work of previous authors concerning stiletto fly immatures to a degree comparable to Kröber and his improvements on the knowledge of stiletto fly adults. In 1950, she published a paper on immatures of several Australian stiletto flies that began with a succinct review of the literature published after 1834. English presented detailed figures and descriptions of stiletto fly immatures and, she was able to identify characters of the larvae and pupae that were of taxonomic utility. In one paper, English doubled the number of stiletto fly genera with described immatures (Hennig 1952) and gave the first larval habitat descriptions for several Australian species. English deftly moved from detailed observations and comparative analyses to taxonomic evaluations in this paper, which resulted in the first "tentative" keys to immature Therevidae (English 1950). In this way, English provided future systematists with both a methodology and character repertoire to promote anatomical, ecological, and phylogenetic studies featuring stiletto fly immatures.

Willi Hennig's<sup>137</sup> comparative studies of Diptera in 1952 represent further application and synthesis of data on stiletto fly immatures, during which he examined the morphology of stiletto fly immatures in the context of dipteran phylogeny. Hennig brought cladistic methodology to the forefront of phylogenetic study after 1950, developing his ideas while working on the phylogeny of Diptera (Hennig 1952). Using figures of *Thereva nobilitata* and an undetermined species of *Thereva*, Hennig described the general features of stiletto fly morphology, noting the structural similarities between larvae of therevids and scenopinids.

However, the similarities between the larvae of Therevidae and Scenopinidae were described in 1917 by John Malloch,<sup>138</sup> who noted that larvae of both families share the secondary division of the abdominal segments and a single dorsal metacephalic rod. In his "Preliminary classification of Diptera exclusive of Pupiparia, based upon larval and pupal characters . . .," Malloch formally classified Therevidae and Scenopinidae in the superfamily Therevoidea based on these characters of the larval and pupal morphology. Hendel and Beier arrived at the same conclusion in 1938, but Malloch restricted Therevoidea to include only Therevidae and Scenopinidae, tentatively classifying Apioceridae (for which neither Malloch nor Hendel & Beier had immatures to examine) in the superfamily Asiloidea.

The taxonomic decisions of these authors based on these larval characters, which are similar to Brauns' conclusions reported in *Puppen ter-ricoler Dipterenlarven* (1954), reinforced the idea that there is phylogenetic affinity between therevids and scenopinids. Larval characters provide synapomorphies that join Therevidae and Scenopinidae as sister taxa within Asiloidea (Woodley 1989) and emphasize the importance of larval morphology in phylogenetic analyses of Diptera.

### *The Search for Monophyletic Groups*

Intensive study of stiletto fly immatures and dipteran phylogeny developed the systematics of Therevidae but also underscored the need for further taxonomic studies within the Therevidae. In *Faune de France*, Ségué (1926) expressed his dissatisfaction with the state of stiletto fly systematics after having studied the identification keys of Kröber. Despite his cynical tone, Ségué actually promoted further taxonomic study of Therevidae by repeating a statement first seen in *Feuille des jeunes Naturalistes*, 1912:

Cette étude confirmera la remarque de deux maîtres qui ont justement écrit que cette famille [Therevidae] était un labyrinthe.

In 1964, Boris Rohdendorf<sup>139</sup> elaborated on the studies of Hennig, stating that Therevidae was "evidently homogenous and not divided into secondary groupings but this needs further study" and argued that Scenopinidae, not Therevidae, is the group closest to the ancestral forms of "Asilidea [sic]"<sup>140</sup> (Rohdendorf 1964). This increased scrutiny of Therevidae, and the genera placed within it, called for a new approach to study of the family that emphasized taxonomic precision and phylogenetic relevance.

Pioneering this new approach to defining groups in Therevidae was Leif Lyneborg,<sup>141</sup> who began detailed study of the male genitalia morphology while in Copenhagen during the late 1960s. Impressed by the taxonomic utility of male genitalic features for species identifications,<sup>138</sup> Lyneborg prioritized describing and illustrating the internal and external structures of the male genitalia of stiletto flies (Lyneborg 1965, 1968a–b). Working primarily with European stiletto flies, Lyneborg was able to complement figures of the

frontal callus with figures of the aedeagal complex to characterize females and males of *Thereva* species (Lyneborg & Spitzer 1974). As a result of independent research and collaborative studies with Akira Nagatomi<sup>143</sup> that involved comparative work on stiletto flies and other brachycerous flies, Lyneborg began to adapt and develop terminology for the various structures of the male genitalia. This previously untapped reservoir of morphological characters gave Lyneborg a perspective he later employed to examine generic circumscriptions in Therevidae with the goal of recognizing monophyletic units (Lyneborg 1976a).

Lyneborg coordinated his taxonomic studies of Therevidae with an American dipterist, Michael Irwin,<sup>144</sup> beginning in the late 1970s while continuing to collaborate with Nagatomi during the late 1980s concerning the Japanese stiletto fly fauna. Irwin began his studies of Therevidae in California with *Pherocera*<sup>145</sup> during the late 1960s under the guidance of Cole's colleague, Evert Schlinger,<sup>146</sup> and moved to South Africa in the 1970s, publishing on other stiletto fly genera in the subfamily Phycinae. Compelled by the undescribed diversity he observed while revising *Pherocera*, Irwin employed novel collecting strategies for Therevidae (e.g., malaise traps, sifting sand and soil for larvae) to sample unexplored or undercollected regions throughout the world. Extensive collecting of adults and larvae in the United States, South Africa, and countries in South America increased the number and diversity of specimens on hand for this family of Diptera and allowed Irwin to accumulate reams of ecological data associated with stiletto fly specimens. This strong ecological foundation was evident in 1976 as Irwin produced the first paper that examined group relationships within Therevidae in an explicitly phylogenetic context. In this paper, Irwin examined the correlation between female morphology and oviposition behavior with respect to stiletto fly phylogeny. Irwin's taxonomic studies initially focused on genera related to *Pherocera* and *Xestomyza* and later focused on genera of the Nearctic and Neotropical Regions. This concentration was intended to complement the work of Lyneborg on genera well represented in the Palaearctic (e.g., *Thereva* and *Dialineura*) and the Afrotropical Regions.

After Lyneborg's 1976 revision of Afrotropical therevines, Irwin and Lyneborg worked in collaboration to redefine the genera of Therevidae by

appraising traditional characters and incorporating characters of the male genitalia. Starting from the groups proposed by Becker in 1912 and used by Kröber in 1925 (the *Phycus*-, *Xestomyza*-, and *Thereva*-groups<sup>147</sup>), Irwin and Lyneborg eventually developed a classification of Therevidae with two subfamilies. They abandoned the diagnoses of Becker and Kröber, who used antennal similarities to define their groups, and used characters of the male internal genitalia, female external terminalia, and vein  $R_1$  of the wing (Irwin 1972; Lyneborg 1972; Irwin & Lyneborg 1981a; Lyneborg 1983, 1987b). Applying the techniques and results Oskar Theodor published in 1976 for Asilidae, Irwin examined the morphology of the female reproductive system of Therevidae. He began detailed study of this previously untapped resource of characters in Therevidae, which have proven to be illuminating in phylogenetic analyses and taxonomic characterizations (Gaimari & Irwin 1999, Winterton *et al.* 2001), during a 1987–1988 sabbatical leave to the laboratory of David Yeates<sup>148</sup> at the University of Queensland.

The most recent diagnosis of the genus *Thereva* highlights characters described during this period of increased focus on stiletto fly phylogeny, which emphasizes characters of the male terminalia. In their revision of Nearctic Therevidae, Irwin & Lyneborg (1981a: 218) described an intriguing structure of the male genitalia whose significance had not been explored:

Ventral epandrial sclerite . . . composed of a sclerotized midposterior section below cerci and 2 lateral sclerotizations attached by a membrane to posterolateral [sic] margins of epandrium, but not extending anteriorly to base of epandrium and not strongly connected to aedeagus. . . .

First recognized as a potential synapomorphic feature of *Thereva* by Lyneborg in 1976, current study has shown that only a few other therevine taxa have similar sclerotized areas of the ventral epandrial sclerite (e.g., *Tabuda*). In addition to characters of the male genitalia, the dimensions of the head of adult stiletto flies have also been implicated as revealing synapomorphic characters for *Thereva* (Lyneborg 1976a). Thoracic or facial pilosity, as translated into taxonomic characters in Irwin & Lyneborg in their 1981 revision of Nearctic Therevidae, have uncertain significance to phylogenetic studies of Therevinae and *Thereva*.

Aside from the relatively few new taxa described in recent generic revisions, there has been little alpha-level taxonomy concerning *Thereva* and Therevidae since 1939. Since Kröber's last descriptions, only 33 species-group names were proposed in combination with *Thereva*. The ten authors of these names are Ôuchi,<sup>149</sup> Collin,<sup>150</sup> James,<sup>151</sup> Séguy, Frey, Cole, Hollis,<sup>152</sup> Trojan,<sup>153</sup> Lyneborg, and Báez<sup>154</sup> (Fig. 3). However, Irwin & Lyneborg proposed a total of 37 genus-group names in Therevidae between 1972 and 1989 (Fig. 6), with Vadim Zaitzev<sup>155</sup> and Nagatomi co-authoring two additional genus-group names (Lyneborg & Zaitzev 1980, Nagatomi & Lyneborg 1987a, Nagatomi *et al.* 1991b). Besides the studies of Lyneborg and Irwin, revisionary work on Therevidae during the 1970s was also produced by Zaitzev, who similarly focused on the terminalia of adults in his revisions of genera, mostly distributed in central and eastern Asia (Zaitzev 1970a, 1970b, 1971a–d, 1973, 1974, 1975, 1976, 1977a, 1977b, 1979). More recent publications on Therevidae are limited to morphological studies of the enigmatic genus *Apsilocephala*<sup>156</sup> (Nagatomi *et al.* 1991a–c), revisions of Japanese stiletto fly fauna (Nagatomi & Lyneborg 1988a–b, 1989a–b), and substantial revisionary work by Donald Webb<sup>157</sup> and Irwin on genera of the Nearctic and Neotropical Regions (Webb & Irwin 1989, 1991a–c, 1995, 1999; Irwin & Webb 1992).

In 1995, Irwin was awarded a PEET (Partnerships for Enhancing Expertise in Taxonomy) grant by the National Science Foundation with the goals of training a new generation of systematists (concentrating on Diptera), developing new technologies to organize and disseminate systematic information, and producing monographs on the family Therevidae. This grant has funded an international effort to enhance the systematics of Therevidae and has cultivated study of this poorly known group of flies that is unprecedented in its intensity and scope. Recent study of the diverse Australian fauna by Yeates and his former graduate student, Shaun Winterton<sup>158</sup>, has revealed an unexpected degree of complexity on the spermathecal sacs of female stiletto flies useful in species-level taxonomy and generic revisions. The first stiletto fly DNA was extracted and sequenced by Brian Wiegmann<sup>159</sup> and his graduate student, Longlong Yang,<sup>160</sup> and these molecular sequences have been used to complement the morphological data sets being compiled for high-

er-level phylogenetic analyses of Therevidae. Continued exploration of the worldwide stiletto fly fauna, headed by Irwin, has secured material critical in the revisions of genera absent from or poorly represented in museum collections.

Publications on Therevidae, enhanced by the high-quality illustrations of Jill Marie Metz<sup>161</sup>, are being produced by a growing base of dipterists. In 1999, this group included the three principal investigators (Michael Irwin, Brian Wiegmann, and David Yeates), four collaborators (Stephen Gaimari,<sup>162</sup> Leif Lyneborg, F. Christian Thompson,<sup>163</sup> and Donald Webb), and five graduate students (Martin Hauser,<sup>164</sup> Kevin Holston,<sup>165</sup> Mark Metz,<sup>166</sup> Shaun Winterton, and Longlong Yang). The systematic data on Therevidae are being organized and managed by a database system, Mandala™, designed by Gail Kampmeier<sup>167</sup> and the other members of this group. Mandala™ was designed to organize information on the family Therevidae and facilitate advances in understanding the natural history of this poorly known group of flies. This most recent development in the history of Therevidae has marked the entrance of the family into "the new systematics" (Mayr & Ashlock 1991), in which the study of Therevidae has become a biological enterprise rather than a taxonomic exercise.

### *Answering the Nomenclatural Challenge in Thereva*

In response to the rigor with which taxa are being examined, and to the massive accumulation of information concerning these taxa, the study of Therevidae has entered another phase of specialization. Recent intensive study of genera within Therevidae has been effective during preliminary attempts to understand the phylogeny and biology of the family. The paradigm of study in systematics that once promoted general treatments of taxa at the family level has shifted again in response to modern phylogenetic concerns. This shift places increasing emphasis on the genus as the primary unit of phylogenetic study in Therevidae, making a worldwide revision of *Thereva* an appropriate goal of current systematic study.

Systematic data represented by names, taxonomic descriptions, observations, and hypotheses concerning the genus *Thereva* began 230 years ago and continues to accumulate. The history of the genus *Thereva* reveals the dependence of system-

atic research on *Thereva*, Therevidae, and Diptera on the utility of databases holding systematic information. Therefore, periodic compilations of these often scattered data are necessary in order to move beyond the limits of current knowledge of *Thereva*, launching further studies from a platform strengthened by critical review. This most recent historical account of the genus *Thereva* is the vehicle that will carry the study of this genus into the realm of modern phylogenetic systematics.

The Systematic Database of *Thereva* Names presented herein is the complement to this historical account and gives a modern answer to the challenge presented by 230 years of nomenclatural activity. Far from unprecedented, this nomenclatural database is simply the most recent effort to locate, identify, and characterize all species-group names combined with the genus-group name *Thereva*. Built on the advances of previous iterations, the database is designed to shed the weaknesses of recent nomenclatural summaries by exploiting the strengths of taxon-specific databases and computer-based technologies. It now stands as the most recent milestone in stiletto fly systematics: a monument that will undoubtedly be restored over time, but whose essential design has been established herein as part of the legacy of the genus *Thereva*.

### ON THE GENUS *THEREVA* LATREILLE, 1797

#### *Circumscription and Taxonomic Status of Thereva*

A survey of the worldwide species diversity of *Thereva* reveals that taxonomic study of this genus remains in the realm of data collection and taxon discovery.<sup>168</sup> The approximately 180 species of *Thereva* are robust, medium-sized stiletto flies that are found worldwide except in the Australasian Region (Mann 1928, Irwin & Lyneborg 1989). The Palaearctic Region has the highest diversity of *Thereva* with over 130 species, 65 of which were originally described by Kröber between 1912 and 1937 (Fig. 4). In 1976, Lyneborg described seven new species of *Thereva* from the Afrotropical Region, increasing the total number of species in this region to eleven. Since Coquillett revised the Therevidae of North America in 1894, the number of described species of Nearctic *Thereva* increased from nine to thirty. The Oriental and Neotropical

regions have much lower described diversity (nine and six species, respectively), but the current placement of species in *Thereva* from Southeast Asia and the Americas south of Mexico has been questioned (Lyneborg 1975, Irwin & Lyneborg 1981a). Although ecological characterizations are rarely found in published accounts, the majority of *Thereva* species have been collected at high altitudes, in northern latitudes, and in forested habitats ranging from coastal to montane.

Despite the removal of species from *Thereva* to other genera of Therevidae and the discovery of 16 synonyms for Palearctic species (Lyneborg 1989), the number of species classified in this genus continues to increase. Recent revisionary work on the Nearctic fauna has led to the discovery of at least 10 undescribed species that fall within the current taxonomic concept for *Thereva*, which increases the number of described Nearctic *Thereva* species by one-third (K. C. Holston, unpublished data). In the Palearctic Region, records of widespread described species, such as *Thereva apicalis* Wiedemann (recorded from Great Britain, central Europe, and across the Mediterranean region from Spain to Turkey), may reflect misidentifications of undescribed species. Renewed effort to define *Thereva* using modern phylogenetic approaches is an appropriate response to the surge in alpha-level taxonomic work on the genus after 1912 (Figs. 2–5) and revisionary work on *Thereva* species in progress.

Recent morphological studies of the male genitalia do not strongly support the current circumscription of the group, suggesting paraphyly and perhaps even polyphyly (Lyneborg 1976a; Irwin

& Lyneborg 1981a). Similarly, recent identification keys (Irwin & Lyneborg 1981a-b; Zaitzev 1988; Majer 1997) demonstrate that *Thereva* is not easily distinguished from other genera of Therevidae by traditionally employed morphological characters, such as parafacial and presternal pile. Intensive study of the genus *Psilocephala* motivated drastic changes in circumscription that has reduced the number of valid species by half since 1914 (Fig. 2).

In contrast, the Australian stiletto fly genera *Anabarynychus* and *Agapophytus* have shown an increase while *Thereva* has remained stable at nearly 200 species since 1914 (Fig. 2). Although the circumscription of *Thereva* has changed considerably since 1976, with nine species formerly in *Thereva* named as type-species of new genera by Lyneborg or Irwin and Lyneborg (Table 2), the number of included species did not drop as precipitously as for *Psilocephala* (Fig. 2). Until a worldwide revision of *Thereva* is completed, in which the monophyly of the genus is examined in a rigorous phylogenetic context, *Thereva* will remain a taxonomic paradox: a widely-recognized taxon that is not defined by unique features.

#### *Type-species Designation for Thereva*

Although the bifurcated use of the genus-group name *Thereva* was unified after 1820, when Meigen rejected the Fabrician use of *Thereva*, the valid type species designation for this name is still complicated by issues of priority. Publishing his *Précis des caractères génériques des insectes* in 1797, Latreille first made *Thereva* available as a genus-group name but did not designate type

Table 2. Type species of genera proposed during or after 1976 that were removed from *Thereva* as a result of the type designation.

Genus	Type Species, in Original Combination
<i>Stenosathe</i> Lyneborg, 1976: 246	<i>Thereva brachycera</i> Loew, 1858: 336
<i>Irwinella</i> Lyneborg, 1976: 251	<i>Thereva nuba</i> Wiedemann, 1828: 559
<i>Pseudotherava</i> Lyneborg, 1976: 295	<i>Thereva aethiopica</i> Bezzi, 1906: 264
<i>Neotherevella</i> Lyneborg, 1978: 70	<i>Thereva citrina</i> Becker, 1902: 35
<i>Spiriverpa</i> Irwin & Lyneborg, 1981a: 214	<i>Thereva lunulata</i> Zetterstedt, 1838: 523
<i>Tabudamima</i> Irwin & Lyneborg, 1981a: 220	<i>Thereva melanophleba</i> Loew 1876: 317
<i>Acrosathe</i> Irwin & Lyneborg, 1981a: 223	<i>Bibio annulata</i> Fabricius, 1805: 68
<i>Arenigena</i> Irwin & Lyneborg, 1981a: 238	<i>Thereva semitaria</i> Coquillett, 1893: 198
<i>Ammonaios</i> Irwin & Lyneborg, 1981a: 240	<i>Thereva nivea</i> Kröber, 1914: 64

species or identify any included species for the genera in this work. Fabricius published his *Supplementum entomologiae systematicae* in 1798 and identified six species as belonging to *Thereva* in this work, making these species the original nominal species for *Thereva*. Because Latreille had published on the genus prior to Fabricius, Meigen adopted the taxonomic concept Latreille used for *Thereva*. Subsequent authors, attempting to uphold Meigen's decision in the context of accepted rules of nomenclature, have ignored the original nominal species of *Thereva* or treated *Thereva* of Fabricius as a separate proposal of *Thereva* and a junior homonym of Latreille's name. In spite of the unquestionable taxonomic disparity between *Thereva* of Latreille and *Thereva* of Fabricius, the genus-group name *Thereva* is correctly attributed to Latreille but the original nominal species, which are all currently classified as Tachinidae, were established by Fabricius in 1798.

Evidence in Latreille's *Précis* suggests that his attempt to distinguish his generic concepts from others, particularly Fabricius, while conserving the use of the genus names underlies this nomenclatural impasse concerning *Thereva*. In the preface, Latreille explained that his goal was to augment the generic concepts of previous authors with additional characters that would facilitate identification and support a natural classification system for insects. Latreille intended to produce a temporary, convenient index with his *Précis* to complement the works of previous authors, especially those of Fabricius and Olivier. On page seven of the preface, Latreille wrote:

Quel est donc mon intention en publiant cet essai? celle de faciliter la connaissance des genres établis jusque'à ce jour par les plus célèbres Entomologistes et que j'ai pu examiner, d'offrir un répertoire commode à ceux surtout qui ont entre leurs mains les ouvrages de Fabricius et d'Olivier, de suppléer à leurs lacunes en ce point.

Preceding each genus diagnosis, Latreille listed the genus names under which species of the genus had been mentioned, with authors' names following the genus name they had used. With this notation, Latreille was not attributing names to the authors but *generic concepts*, which happen to correspond closely to each other in this work. Similarly, Latreille stated in the *Préface*: "J'ai désigné les genres nouveaux par les astérisques," but

these asterisks were meant to identify new generic concepts as opposed to new genus-group names. Again, there is close correspondence between the generic concepts considered new by Latreille and the proposal of a new genus-group name by Latreille. Unfortunately, Latreille intentionally applied genus names of other authors to taxa outside the original circumscriptions to accomplish the aforementioned goal, which is considered a misidentification in current nomenclatural protocol.

Latreille endorsed the original generic concepts of many authors who proposed genus names in Diptera, but Latreille did not mention the original use of the name (and correct nomenclatural attribution) whenever he radically altered the original generic concept (Table 3). For example, Latreille did not attribute *Ceria* to Scopoli, who used the name for species now classified in Scatopsidae, but to Fabricius, whose genus concept referred to taxa now recognized in Syrphidae.<sup>169</sup> However, Latreille gave "*Ceria*, Scop." as a reference to his *Scathopsus* [sic] (Table 3), indicating that Latreille recognized the original use of the name for scatopsid taxa but preferred the generic concept of Fabricius over that of Scopoli. Similarly, Latreille considered *Sicus* one of his "*genres nouveaux*" because Scopoli used this name for taxa now classified in Conopidae while Latreille used *Sicus* for a previously unrecognized genus of Diptera now classified in Empididae.<sup>170</sup> *Volucella* was attributed to Fabricius, who referred to bombyliid taxa, instead of Geoffroy, who referred to syrphid taxa. Thus, Latreille did not operate within the modern protocols of nomenclatural priority that are now reinforced by formal type designation, and he set up homonymies with *Ceria* and *Sicus* while in effect ignoring the prior use of *Volucella* by Geoffroy.

The appearance of the names *Mulio*<sup>171</sup> and *Thereva* in Latreille's *Précis* suggest that Latreille also attempted to redefine the application of names yet to be published by Fabricius in 1798. Latreille renamed *Cytheria* Fabricius, 1794, as *Mulio*, but priority of the Fabrician name makes *Mulio* Latreille, 1797, an unnecessary change of name. Priority of *Mulio* Latreille, 1797, for taxa now classified in Bombyliidae, over *Mulio* Fabricius, 1798, makes the Fabrician name unavailable. Priority of *Thereva* Latreille, 1797, over *Thereva* Fabricius, 1798, is not accompanied by such an unambiguous case of name reapplication, but

*Thereva* Latreille, 1797, could similarly be considered an unnecessary change of *Bibio* Fabricius, 1775. This would, however, make *Thereva* Latreille an unavailable genus-group name in Therevidae because *Bibio* Fabricius, 1775, is a subsequent use (misidentification) of *Bibio* Geoffroy, 1762.

It is important to note that neither *Mulio* nor *Thereva* are identified by Latreille as "genres nouveaux" (Table 4), even though both names were previously unpublished, which indicates that Latreille was indeed attempting to use these names for previously identified generic concepts. Both of these names represent radical departures from the generic concepts published by Fabricius in 1798, and Latreille would not have attributed either genus to Fabricius for this reason, even if they had been published prior to 1797. In spite of the possibility that Latreille may have usurped the names *Mulio* and *Thereva* from Fabricius, as Fabricius usurped the name *Bibio* from Geoffroy, these names are appropriately treated as first being proposed by Latreille.<sup>172</sup> Consequently, the species Fabricius first associated with these genera in 1798 must also be accepted as the original nominal species, which is an incidental fact with respect to *Mulio* but highly significant with respect to the type designation of *Thereva*.

Authors after 1910 commonly refer to the work in which *Musca plebeja* Linnaeus was first identified as a species of *Thereva* (Latreille 1802: 441) as the valid type designation of *Thereva*.<sup>173</sup> Coquillett, in his *Type-Species of the North American Genera of Diptera*, recognized *Musca plebeja* Linnaeus as the type species of *Thereva* (Coquillett 1910). He referenced Latreille's work of 1802, and wrote "No species," with regard to the original genus description by Latreille in 1797. In 1937, Kröber recognized the same species as the type of his subgenus *Thereva* ("Typus: *Thereva* (*Thereva*) *plebeja* L.") but does not cite any work by Latreille in reference to this designation. None of Kröber's other works record a type species for *Thereva*. The major catalogs of Diptera after 1905 and works on *Thereva* after 1937 record *Musca plebeja* Linnaeus, 1758 as the type-species of *Thereva* "by subsequent monotypy." Lyneborg added, however, in the *Catalogue of the Diptera of the Afrotropical Region* that "*Thereva* Fabricius [is] considered a separate homonymous proposal of the name but [an] I.C.Z.N. decision [is] required" (Lyneborg 1980).

Opinion 441 established a precedent for the course of action suggested by Lyneborg in 1980

(ICZN 1957). This Opinion placed *Bibio* Geoffroy, 1762, in the *Official List of Generic Names in Zoology* as name No. 1050 and fixed the type species of *Bibio* Geoffroy as *Tipula hortulana* Linnaeus. *Bibio* Fabricius, 1775, was declared "a junior homonym of *Bibio* Geoffroy, 1762, as validated under the plenary powers" and was placed on the *Official Index of Rejected and Invalid Generic Names in Zoology* as name No. 841. A crucial difference between the situation with *Bibio* and that of *Thereva* is that Geoffroy established five original nominal species from which a type species, *Tipula hortulana* Linnaeus, was selected. This fact concerning original nominal species makes validation of the type-species designation of Latreille in 1802 "by subsequent monotypy" (Cole 1965, Irwin & Lyneborg 1981a) impossible to support if *Thereva* of Fabricius is considered a subsequent use of the Latreille name. Latreille recognized his genus *Thereva* as a partial synonym of *Bibio*, in the sense of Fabricius, but did not list any species-group names under his original diagnosis of *Thereva*. According to Article 67.2.4 of the Code, this statement of generic synonymy does not "constitute inclusion of the nominal species of the former into the latter" (ICZN 1999). In 1802, Latreille prefaced his redescription of *Thereva* with: "Genre. THÉRÈVE; *thereva* . . . Exemple. *Bibio plebeja*. F." However, Fabricius had explicitly included species in the genus *Thereva* in 1798, making the following six tachinid species the original nominal species (ICZN 1999, Article 67.2) for *Thereva*:

*Thereva subcoleoptrata* (Fabricius, 1798: 560) (*Syrphus*). [misidentification of *Conops subcoleoptera* Linnaeus, species-group name validated by Opinion 896 (ICZN 1970)] (Available, invalid, junior synonym of *Phasia hemiptera* Fabricius.)

*Thereva hemiptera* (Fabricius, 1798: 560) (*Syrphus*). (Available, invalid, obsolete combination of *Phasia hemiptera* Fabricius, 1798.)

*Thereva crassipennis* (Fabricius, 1798: 560) (*Syrphus*). (Available, invalid, junior synonym of *Ectophasia crassipennis* Fabricius, 1798.)

*Thereva affinis* (Fabricius, 1798: 561) (*Syrphus*). (Available, invalid, junior synonym of *Phasia hemiptera* Fabricius, 1798.)

*Thereva analis* Fabricius, 1798: 561. (Available, invalid, junior synonym of *Ectophasia crassipennis* Fabricius.)

*Thereva obesa* Fabricius, 1798: 561. (Available, invalid, obsolete combination of *Phasia obesa* Fabricius.)

Table 3. Latreille's notation, used in *Précis des caractères génériques des insectes, disposés dans un ordre naturel*, to identify genus-group names in Diptera; the attribution implied by Latreille's use of the name; and nomenclatural statements concerning genus-group names Latreille applied to taxa outside the original circumscriptions.

Latreille's Notation for Diptera Genus-Group Names			Attribution	Nomenclatural Statements
SCATHORPUS [sic]. Geoff. <i>Tipula</i> , Linn. Fab. <i>Bibio</i> , Oliv. <i>Ceria</i> , Scop.			Geoffroy, 1762	
KEROPLATUS. Bosc.			Bosc, 1792	
BIBIO. Geoff. Oliv. <i>Tipula</i> , Linn. Fab.			Geoffroy, 1762	
*PSYCHODA. <i>Tipula</i> , Linn. Fab. <i>Bibio</i> , Geoff. Oliv.			Latreille, 1797	
TIPULA. <i>Tipula</i> , Linn. Geoff. Fab. Oliv.			Linnaeus, 1758	
CULEX. Linn. Geoff. Fab. Oliv.			Linnaeus, 1758	
*OGCODES. <i>Musca</i> , Linn. <i>Syrphus</i> , Fab.			Latreille, 1797	
*CYRTUS. <i>Empis</i> , Vill.			Latreille, 1797	
EMPIS. Linn. Fab. Oliv. <i>Asilus</i> , Geoff. Scop.			Linnaeus, 1758	
MULIO. <i>Cytheria</i> , Fab.			Latreille, 1797	Unnecessary change of name for <i>Cytheria</i> Fabricius, 1794 (Bombyliidae). <i>Mulio</i> Fabricius, 1798 (Syrphidae), is a subsequent use (misidentification) of <i>Mulio</i> Latreille, 1797 (Bombyliidae), and is, therefore, an unavailable synonym of <i>Chrysotoxum</i> Meigen, 1803 (Syrphidae).
BOMBYLIUS. Linn. Fab. Oliv. <i>Asilus</i> , Geoff. <i>Tabanus</i> , Linn. Fab.			Linnaeus, 1758	
VOLUCELLA. Fab.			Fabricius, 1794	Reference to <i>Volucella</i> Geoffroy, 1762: 449 (Syrphidae), was not given by Latreille. "Volucella" Fabricius, 1794: 412 (Bombyliidae) is a misspelling of <i>Volucella</i> Geoffroy, 1762, and is, therefore, an unavailable synonym of <i>Usia</i> Latreille, 1802 (Bombyliidae).
ASILUS. Linn. Geoff. Fab. Oliv. <i>Erax</i> , Scop.			Linnaeus, 1758	
*SICUS. <i>Musca</i> , Linn. Fab.			Latreille, 1797	Attribution of <i>Sicus</i> to Scopoli (1763: 1004) was not given by Latreille. <i>Sicus</i> Latreille, 1797: 158 (Empididae), is a subsequent use (misidentification) of <i>Sicus</i> Scopoli, 1763 (Conopidae), and is, therefore, an unavailable synonym of <i>Tachydromia</i> Meigen, 1803 (Empididae).
*COENOMYIA. <i>Tabanus</i> , Fab.			Latreille, 1797	

*DOLICHOPUS. <i>Musca</i> , Linn. Geoff. Fab. <i>Nemotelus</i> , Gée. TABANUS. Linn. Geoff. Fab. Oliv. STOMOXIS [sic]. Geoff. Fab. Oliv. <i>Conops</i> , Linn. MYOPA. Fab. Oliv. <i>Conops</i> , Linn. <i>Asilus</i> , Geoff. *ZODION. <i>Conops</i> , Fab.	Latreille, 1797 Linnaeus, 1758 Geoffroy, 1762 Fabricius, 1775 Latreille, 1797
CONOPS. Linn. Fab. Oliv. <i>Asilus</i> , Geoff. CERIA. Fab. <i>Musca</i> , Linn. <i>Syrphus</i> , Fab.	Linnaeus, 1758 Fabricius, 1794
SYRPHUS. Fab. Oliv. <i>Musca</i> , Linn. Geoff. <i>Conops</i> , Scop. RHINGIA. Scop. Fab. Oliv. <i>Conops</i> , Linn. NEMOTEL[us]. Geoff. Fab. <i>Musca</i> , Linn. <i>Stratiomys</i> , Fab.	Fabricius, 1775 Scopoli, 1763 Geoffroy, 1762
STRATIOMYS. Geoff. Fab. Oliv. <i>Musca</i> , Linn. MIDAS [sic]. Fab. <i>Musca</i> , Linn. <i>Bibio</i> , Fab. <i>Nemotelus</i> , Gée. RHAGIO. Fab. Oliv. <i>Musca</i> , Linn. <i>Asilus</i> , Geoff. <i>Nemotelus</i> , Gée. <i>Erax</i> , Scop. THEREVA. <i>Musca</i> , Linn. <i>Tabanus</i> , Geoff. <i>Bibio</i> , Fab.	Geoffroy, 1762 Fabricius, 1794 Fabricius, 1775 Latreille 1797
ANTHRAX. Scop. Fab. <i>Musca</i> , Linn. Geoff. <i>Nemotelus</i> , Gée. Oliv. <i>Bibio</i> , Fab.	Scopoli, 1763
*LISPE. <i>Musca</i> , Gée. *PHORA. MUSCA. Linn. Geoff. Fab. Oliv. OESTRUS. Linn. Geoff. Fab. Oliv. HIPPOBOSCA. Linn. Geoff. Fab. Oliv.	Latreille, 1797 Latreille, 1797 Linnaeus, 1758 Linnaeus, 1758 Linnaeus, 1758

\* use of the asterisk in Table 4 follows Latreille's 1797 notation, to indicate genera Latreille considered "genres nouveaux."

Attribution of *Ceria* to Scopoli (1763: 351), was not given by Latreille except in reference to *Scathopsus* [sic] and *Psychoda*. *Ceria* Fabricius, 1794: 227 (Syrphidae), is a subsequent use (misidentification) of *Sicus* Scopoli, 1763 (Scatopsidae), and is, therefore, an unavailable synonym of *Ceriana* Rafinesque, 1815 (Syrphidae).

*Thereva* Fabricius, 1798 (Tachinidae), is a subsequent use (misidentification) of *Thereva* Latreille, 1797 (Therevidae), and is, therefore, an unavailable synonym of *Phasia* Latreille, 1802 (Tachinidae).

None of the methods of subsequent type species designation described in Article 69 may be employed to fix the type species of *Thereva* on *Musca plebeja* Linnaeus because this species is not an original nominal species of *Thereva*.

The difficult taxonomy and intricate problems of nomenclature in Tachinidae have motivated a proliferation of tachinid genus-group names and prompted several nomenclatural decisions and ICZN rulings concerning the nominal species of *Thereva*. Opinion 896 of the Commission fixed *Conops subcoleoptratus* Linnaeus as the type species of *Phasia* Latreille, 1804 (ICZN 1970). In 1984, Herting designated *Conops subcoleoptratus* Linnaeus, 1758, as the type species of *Thereva* Fabricius, 1798 (ICZN 1970) and considered *Thereva* Fabricius, 1798, both an invalid junior homonym of *Thereva* Latreille, 1797, and an unavailable, invalid synonym of *Phasia* Latreille, 1804 (ICZN 1970, Herting & Dely-Draskovits 1993). In 1912, Townsend designated *Syrphus crassipennis* Fabricius, 1794, a senior synonym of *Thereva analis* Fabricius, 1798, as the type-species of *Ectophasia* Townsend, 1912. As shown in the above list of nominal species of *Thereva*, *Syrphus affinis* Fabricius has been synonymized with *Syrphus hemipterus* Fabricius, and *Syrphus hemipterus* Fabricius and *Thereva obesa* Fabricius have valid species-group names that are now in combination with *Phasia* Latreille, 1804. These intricate associations among the nominal species names of *Thereva* and their use as type species in Tachinidae indicate that an accepted type fixation for *Thereva* based on strict adherence to Article 69 of the Code would have serious consequences for tachinid nomenclature.

In spite of its informal acceptance as the type of *Thereva*, a ruling by the Commission is required to fix *Musca plebeja* Linnaeus, 1758, as the type species of *Thereva* Latreille, 1797. Until then, *Thereva* is not fixed by a type species in the family Therevidae, which makes the stability of family-group and genus-group names in Therevidae and Tachinidae uncertain. The proper course of action may be inferred from Article 41 of the Code, which is written in reference to type-genus designations: "If stability and continuity in the meaning of a family-group name are threatened by the discovery that the type genus of the taxon is misidentified (i.e. interpreted in a sense other than that defined by its type species), or that the type genus was based on a misidentified type

species, or that a valid fixation of type species for the type genus had been overlooked, see Article 65.2 [which states that, with an overlooked type fixation (Article 65.2.2), the case is to be referred to the Commission for a ruling]."

### Generic Synonymy

In contrast to the difficulties concerning the type-species designation, the generic synonymy of *Thereva* has remained uncomplicated since its initial use. Latreille listed *Musca* Linnaeus, *Bibio* Fabricius, *Nemotelus* De Geer, and *Tabanus* Geoffroy as taxonomically relevant to *Thereva* (Latreille 1797, Latreille 1809; see Table 3), but these names are considered partial synonymies invoked by Latreille to indicate his circumscription of *Thereva* (Table 3). Several authors considered other genera of Therevidae, particularly *Psilcephala* Zetterstedt and *Dialineura* Rondani, as subgenera or junior synonyms of *Thereva* (Loew 1840, Gobert 1887, Rondani 1856, Becker *et al.* 1903, Kertész 1909). While discussing the classification of *Xestomyza* in 1850, Dufour used "*Theresa*" instead of "*Thereva*," which is considered a misspelling of *Thereva*: there is no evidence to support its status as an emendation. Similarly, *Thereva* was misspelled by Loew (1854: 1) in original combination with "*aurata*" as "*Therena*." This is probably a printing error of "*Thereua*," the spelling of *Thereva* used by Loew in most of his works on Diptera. While describing two new species of *Thereva* in 1943, Ôuchi consistently used the spelling "*Therova*," but there is no evidence that "*Therova*" is an emendation.

A more controversial synonym of *Thereva* is "*Thereua*," whose status has been noted as a "variant spelling" without attribution (Lyneborg 1980, Lyneborg 1989) or an "error" attributed to Loew (Irwin & Lyneborg 1981a), but this name was first used by Louis Agassiz. Agassiz (1846b: VI) expressed the second of his four reasons for publishing the *Index Universalis* in the preface as follows: "to make accessible consequently to a greater extent the necessary Zoological nomenclatural reforms for the complete whole of names, whether in the animal and plant kingdoms or used double in different individual classes of the animal kingdom, placed next to each other, in turn, in order to make available the ability to assign the correct priority of every one of them, in whichever of the two kingdoms [it is] classed."<sup>174</sup>

His third objective, "the facts, therefore, established, to maintain today in systematic nomenclature minimal changes, the opportunity having illuminated the blemishes which are gushing out of those names and corrected whichever are full of small faults," demonstrates Agassiz's use of emendation in the *Index* to correct spellings for names he considered erroneous.<sup>175</sup>

In the *Index*, which is arranged alphabetically, Agassiz (1846b: 368) presented three names with the following notation:

<sup>0</sup>*Thereua* Latr. Dipt. 1796. (*Scr. Thereva*).

<sup>0</sup>*Thereus* Hübn. Lep. 1816.

\**Thereva* Fall. Dipt. 1820.

Agassiz (1846b: VI) defined, in the preface to the *Index*, the symbols preceding names listed in the *Index* as indicators of homonyms or errors of name formation. In both the *Index* and the *Nomenclator*, Agassiz emended the original spelling of *Thereva* used by Latreille to "*Thereua*," giving the original spelling of "*Thereua*" in the notation "(*Scr. Thereva*)."<sup>176</sup> "*Thereva* Fall.," was given without emendation to show the second use of the name in Diptera for tachinid taxa, according to Agassiz's use of the medium-sized asterisk in the *Index*.<sup>176</sup> Agassiz (1846a: 39) gave the family-level name for "*Thereua* Latr." as "*Xylotomae*" and gave the genus synonym and family-level name for "*Thereva* Fall." as "*=Phasia.—Muscariae*," clearly recognizing the application of *Thereva* by the two authors as different. All three of the above names were considered homonyms by Agassiz, which is substantiated by his use of the root "venor" for these names in the *Nomenclator* (Agassiz 1846a: "*Lepidoptera*," pg. 65; "*Diptera*," pg. 39). According to Article 33 of the Code, "*Thereua*" is, therefore, an unjustified emendation of *Thereva*.

Although Loew published species-group names in combination with *Thereva* in 1840, he used the spelling "*Thereua*" in his subsequent works on stiletto flies. This change was neither explicitly recognized nor explained by Loew (Osten Sacken 1903), and it also was not followed by most of his contemporaries (Osten Sacken 1903, Verrall 1909). With the exception of a single publication by Ferdinand Kowarz in 1883, species-group names originally in combination with "*Thereua*" are attributable to Loew. "*Thereua*" appearing in works by Kowarz and Loew is con-

sidered subsequent use of the emendation of *Thereva* to "*Thereua*" by Agassiz in 1846.

There are a few subjective synonyms of *Thereva* that reflect changes of generic circumscriptions in Therevidae. Kertész first established the status of *Exapata* Macquart, 1840,<sup>177</sup> as a junior synonym of *Thereva* in 1909. In 1937, Kröber reduced the genera *Athereva* Kröber, 1912,<sup>178</sup> and *Hermannia* Kröber, 1912,<sup>179</sup> to subgenera of *Thereva*. In 1986, Lyneborg synonymized *Athereva* with *Thereva* and restored *Hermannia* to genus rank, renaming it *Hermannula*. Three other subjective synonyms have been identified by Lyneborg (Lyneborg 1976b, Lyneborg 1989) and complete the following list of genus-group synonyms of *Thereva*:

*Thereva* Latreille, 1797: 167.

*Exapata* Macquart, 1840: 26 (Available, invalid: junior subjective synonym).

*Thereua* Agassiz, 1846: 39 (Available, invalid: unjustified emendation).

*Caenozona* Kröber, 1912: 251 (Available, invalid: junior subjective synonym).

*Neothereva* Kröber, 1912: 138 (Available, invalid: junior subjective synonym).

*Athereva* Kröber, 1925: 26 (Available, invalid: junior subjective synonym).

*Reinigiellum* Enderlein, 1934: 139 (Available, invalid: junior subjective synonym).

*Theresa* Dufour, 1850: 139 (Unavailable: misspelling).

*Therena* Loew, 1854: 1 (Unavailable: misspelling).

*Therva* Ôuchi, 1936: 483 (Unavailable: misspelling).

## EPILOGUE

O, be some other name!

What's in a name? that which we call a rose

By any other name would smell as sweet. . .

These words, penned by Shakespeare (*Romeo and Juliet* 2.2.43–44.), reveal two properties of names that are crucial in understanding the weaknesses and strengths of nomenclature. First, names themselves do not change the nature of the objects they are meant to differentiate. However, names may change our perspective and subsequently our course of action concerning these objects. Second, names provide concepts that can be developed and shared as repositories of observational information. The associations one attaches

to the name "rose" will vary among individuals. Nevertheless, use of the name "rose" provides expedient access to information associated with the name. These properties of names underscore the fundamental importance of taxonomic nomenclature to all disciplines of biology and the critical role of the "specialized wordsmiths" who establish these systems of names (Bock 1994).

Systematists lay the foundation for taxonomic concepts (e.g., "rose" or *Rosa* spp.) developed by themselves and others, and they simultaneously provide systems that allow these concepts to be developed and used over time by many individuals. Unfortunately, advances in the biological and evolutionary understanding of many taxa and in the techniques to characterize and name them has not been complemented by advances in the management of the names that have been ascribed to them. This is evident when one considers the recent advances in the first two categories (e.g., development and improvement of cladistics software, development of the field of molecular phylogenetics, development of models to describe evolutionary phenomena) and the lack of recent innovations concerning nomenclature.

The continual discovery and characterization of new taxa, although desirable and encouraged, have established an immense nomenclatural challenge for the modern systematist. This challenge is to locate, consolidate, and characterize established taxonomic names; to facilitate proper usage of these names; and to facilitate the addition of new names for taxa to the existing set of names.

During the past two centuries, systematists have established a myriad of taxonomic names whose management has become increasingly difficult. Although names are necessarily generated after discovery of new taxa, Louis Agassiz identified, as early as 1859, the "objectionable practice" of changing names or modifying the extent and meaning of old names "without the addition of new information or new views" and the contribution of this practice to a "useless multiplication of names" (Lurie 1962). Agassiz recognized that future systematists face "an herculean task" as they develop and summarize the results of taxonomic research, which includes advances in nomenclature (Lurie 1962); a sentiment reiterated by Thompson & Pont (1994).

Although scientific nomenclature remains a neglected area of research concerning many taxonomic groups (Bock 1994), systematics and all disciplines of biological science are dependent on concerted effort and innovation on this front. The success of future systematics research on Therevidae relies not only on evaluation of our past efforts but also preparation for the imminent journey into uncharted territory as we enter a new age of biological discovery. Therefore, now that financial resources and research emphasis are increasingly being directed toward cataloging and characterizing biodiversity, it is paramount that systematists acknowledge and expediently answer the nomenclatural challenge for all taxonomic groups.

#### ENDNOTES

- <sup>1</sup> Pankhurst (1991: 13) lists the "important features of a computerised database" as 1) random access to data, 2) multiple indexing of data, 3) easy sorting of data, and 4) effective retrieval of information.
- <sup>2</sup> Unless otherwise noted, the biographical data presented in this history concerning deceased entomologists was taken from *Litteratura Taxonomica Dipteriorum* 1758–1930 (Evenhuis 1997a–b) and *A Compendium of the Biographical Literature on Deceased Entomologists* (Gilbert 1977). Further biographical data on living and deceased dipterists was verified by recent publications and other compilations, including the "World Diptera Systematists Home Page" (<http://www.bishop.hawaii.org/bishop/ento/dipterists/worlddipt.html>; Neal Evenhuis).
- <sup>3</sup> *Musca* Linnaeus, 1758: 589 (Diptera: Muscidae).
- <sup>4</sup> *Thereva* Latreille, 1797: 167 (Diptera: Therevidae).
- <sup>5</sup> This period (1758–1820) is summarized in Figure 1. Emphasis is placed on the use of *Thereva*, *Bibio*, and *Phasia* and the related nomenclatural acts of Fabricius, Latreille, and Meigen.
- <sup>6</sup> Carolus Linnaeus [Carl von Linné] (1701–1778).
- <sup>7</sup> Remarkably, this wing character state (two wings) remains the principal means by which flies are distinguished from other orders of insects over 200 years after Linnaeus presented a diagnosis for the order Diptera in 1758. Aristotle, however, used the name "diptera" (Gk., διπτερα) before Linnaeus in reference to flies (Peck 1937: translation, Aristotle:

- Parts of Animals*, 682b. 12); Linnaeus adapted and modified the diagnosis for Diptera found in Aristotle's classifications.
- <sup>8</sup> *Thereva plebeja* (Linnaeus, 1758: 589) (*Musca*) (Diptera: Therevidae).
  - <sup>9</sup> "*Habitat passim, minus frequens.*" (Linnaeus 1760: 140).
  - <sup>10</sup> *Dialineura anilis* (Linnaeus, 1758: 442) (*Musca*) (Diptera: Therevidae).
  - <sup>11</sup> *Dialineura* Rondani, 1856: 155 (Diptera: Therevidae).
  - <sup>12</sup> Camillo Rondani (1807–1879).
  - <sup>13</sup> Johann Christian Fabricius [written as "I. C. Fabricius" in his Latin works] (1745–1808).
  - <sup>14</sup> *Bibio* Fabricius, 1775: 756 is a junior homonym of *Bibio* Geoffroy, 1762: 568 according to Opinion 441 (ICZN 1957).
  - <sup>15</sup> Étienne Louis Geoffroy (1725–1810).
  - <sup>16</sup> *Stratiomys* Geoffroy, 1762: 475 (Diptera: Stratiomyidae).
  - <sup>17</sup> *Stomoxys* Geoffroy, 1762: 538 (Diptera: Muscidae).
  - <sup>18</sup> *Tipula* Linnaeus, 1758: 585 (Diptera: Tipulidae).
  - <sup>19</sup> Geoffroy did not name his two new species of *Bibio* using binomial nomenclature; the valid binomial names for the three Linnaean species are *Bibio febrilis* (Linnaeus, 1758: 588) (Diptera: Bibionidae), *Bibio hortulana* (Linnaeus, 1758: 588) (Diptera: Bibionidae), and *Psychoda phalaenoides* (Linnaeus, 1758: 588) (Diptera: Psychodidae).
  - <sup>20</sup> *Thereva nobilitata* (Fabricius, 1775: 757) (*Bibio*) (Diptera: Therevidae).
  - <sup>21</sup> This species, *Plecia troglodyta* (Fabricius, 1775: 759) (Diptera: Bibionidae), was not one of the five nominal species of *Bibio* Geoffroy.
  - <sup>22</sup> [M. le Baron] Carl [Karl, Carolus, Charles] [Frihirre] De Geer (1720–1778).
  - <sup>23</sup> *Nemotelus* Geoffroy, 1762: 450 (Diptera: Stratiomyidae).
  - <sup>24</sup> The species-group name *fasciatus* De Geer, 1776: 186 (*Nemotelus*), is a subjective junior synonym of *plebeja* Linnaeus, 1758: 589 (*Musca*) (Diptera: Therevidae).
  - <sup>25</sup> The species-group name *hirtus* De Geer, 1776: 187 (*Nemotelus*), is a subjective junior synonym of *nobilitata* Fabricius, 1775: 757 (*Bibio*) (Diptera: Therevidae).
  - <sup>26</sup> *Scenopinus fenestralis* (Linnaeus, 1758: 597) (*Musca*) (Diptera: Scenopinidae).
  - <sup>27</sup> Latreille (1805: 326) was the first to recognize "*Geoff. taon*, n° 6." as a description of a species of stiletto fly, but Geoffroy, in Fourcroy (1785: 457), renamed this taxon "*Tabanus intersectus*" in *Entomologia Parisiensis*. The species-group name *intersectus* Geoffroy in Fourcroy, 1785: 457 (*Tabanus*), is a junior subjective synonym of *plebeja* Linnaeus, 1758: 589 (*Musca*), following Illiger (1807: 424).
  - <sup>28</sup> Moses [Moise] Harris (1731–c. 1785).
  - <sup>29</sup> *Sylvicola* Harris, 1779: 100 (Diptera: Anisopodidae).
  - <sup>30</sup> *Thereva unica* (Harris, 1779: 103) (*Sylvicola*) (Diptera: Therevidae).
  - <sup>31</sup> The species-group name *monos* Harris, 1779: 103 (*Sylvicola*) is a subjective junior synonym of *nobilitata* Fabricius, 1775: 757 (*Bibio*) (Diptera: Therevidae).
  - <sup>32</sup> Johann Friedrich Gmelin (1745–1804).
  - <sup>33</sup> William Turton (1762–1835).
  - <sup>34</sup> The species-group name *nobilis* Gmelin, 1790: 2829 (*Musca*) is a misspelling of *nobilitata* Fabricius, 1775: 757 (*Bibio*).
  - <sup>35</sup> Pierre André Latreille (1762–1833).
  - <sup>36</sup> Evenhuis (1997b) gives the date of Latreille's *Précis* as 1797, based primarily on the weekly minutes of the *Académie [l'Académie des Sciences de Paris]* that record the presentation of this work as 13 January 1797. The year 1797 will be used in reference to Latreille's *Précis*; the date given in most catalogs of Diptera is 1796.
  - <sup>37</sup> The species-group name *flavipes* Fabricius, 1794: 254 (*Bibio*), is a junior subjective synonym of *anilis* Linnaeus, 1760: 442 (*Dialineura*) (Diptera: Therevidae).
  - <sup>38</sup> Fabricius describes the antennae of *Bibio* as "*Antennae filatae*" (1775: 756), which can be translated more literally as "*Antennae thread-by-thread.*"
  - <sup>39</sup> *Syrphus* Fabricius, 1775: 762 (Diptera: Syrphidae).
  - <sup>40</sup> A detailed account of problems concerning the type-species designation for *Thereva* is discussed in the section of this work entitled "Type-Species Designation for *Thereva*."
  - <sup>41</sup> *Rhagio* Fabricius, 1775: 761 (Diptera: Rhagionidae).
  - <sup>42</sup> *Anthrax* Scopoli, 1763: 358 (Diptera: Bombyliidae).
  - <sup>43</sup> *Phasia* Latreille, 1804: 379 (Diptera: Tachinidae).
  - <sup>44</sup> Georg Wolfgang Franz Panzer (1755–1829).
  - <sup>45</sup> [Baron] Charles Athanase [de] Walckenaer (1771–1852).
  - <sup>46</sup> *Phasia obesa* (Fabricius, 1798: 561) (*Thereva*) (Diptera: Tachinidae).
  - <sup>47</sup> Pietro Rossi (1738–1804).
  - <sup>48</sup> Georges [Jean] Léopold Chrétien [Nicholas] Frédéric Dagobert [Baron] Cuvier (1769–1832).
  - <sup>49</sup> [Johann] Karl [Wilhelm] Illiger (1775–1813).
  - <sup>50</sup> Johann Rudolf Schellenberg (1740–1806).
  - <sup>51</sup> Johann Wilhelm [Guillaume] Meigen (1764–1845).
  - <sup>52</sup> *Mydas* Fabricius, 1794: 252 (Diptera: Mydidae).
  - <sup>53</sup> Carl Fredrik [Friedrich] Fallén (1764–1830).
  - <sup>54</sup> The original combinations for these names are: *Thereva muscaria* Fallén, 1815: 230; *Thereva hyalipennis*

- Fallén, 1815: 233; *Thereva nana* Fallén, 1815: 233; and *Thereva pygmaea* Fallén, 1815: 234.
- <sup>55</sup> In 1860, André Marie Constant Duméril's (1774–1860) *Entomologie analytique [Histoire générale, classification naturelle méthodique des insectes à l'aide de tableaux synoptiques]* was published in which Duméril recognized the severe nomenclatural disagreement between Latreille and Fabricius concerning *Bibio* and *Thereva* and the resulting "très grand confusion qui trouble considérablement les classificateurs" (Duméril 1860). Nevertheless, Duméril chose to use these genera in the sense of Fabricius but did not establish new species-group names in either genus.
- <sup>56</sup> Genus-group names presented by Meigen, 1800, were considered threats to the stability of the names they would replace by invocation of strict priority (Hemming 1945). The Commission, with Opinion 678, suppressed this work in 1963. To Meigen's credit, there is evidence that he did not authorize the publication of this synopsis of his ideas on the classification of Diptera.
- <sup>57</sup> Meigen used "*europäischen zweiflügligen Insekten*" in the title of his 1804 work on Diptera.
- <sup>58</sup> The species-group name *lugubris* Meigen, 1804b: 214 (*Bibio*), was replaced (due to primary homonymy) by *funeris* Meigen, 1820: 121 (*Thereva*) (Diptera: Therevidae).
- <sup>59</sup> *Thereva fulva* (Meigen, 1820: 123) (*Bibio*) (Diptera: Therevidae).
- <sup>60</sup> Schellenberg (1803: 29) used the name "*Seidenfliege*" in reference to "*Bibio* Fabr."
- <sup>61</sup> *Hirtea* Fabricius, 1798: 551 is a junior synonym of *Bibio* Geoffroy (Diptera: Bibionidae).
- <sup>62</sup> Agassiz, in *Nomenclator Zoologicus*, gives the etymology of *Xylotomae* as "ξύλον, *lignum*; τομεύς, *sector*" (Agassiz 1846a). Considering Meigen's colloquial name for therevids, "*Stilletfliege*," and his use of antennal morphology to distinguish "*Xylotomae*" from "*Mydasii*," it is likely that a proper translation of *Xylotomae* would be "wood cutter," in reference to the attenuated, knife-like or stiletto-like shape of the therevid antenna. Meigen and subsequent authors used "*Xylotomae*" to identify a taxonomic group above the rank of genus, but Meigen did not derive this name from a genus group name for any taxon: it is a descriptive plural referring to the colloquial name "*Stilletfliege*." Therefore, "*Xylotomae*" is unavailable as a family-group name according to Article 11.7 of the Code (ICZN 1999).
- <sup>63</sup> *Mydas* Fabricius, 1775: (Diptera: Mydidae).
- <sup>64</sup> Christian Rudolph Wilhelm Wiedemann [written "C. R. G. Wiedemanni" in his Latin works] (1770–1840).
- <sup>65</sup> *Chironomyza* Wiedemann, 1820: 19 (Diptera: Stratiomyidae).
- <sup>66</sup> Thomas Say (1787–1834).
- <sup>67</sup> Johan Wilhelm Zetterstedt (1785–1874).
- <sup>68</sup> "Anthracides" is an unavailable family-group name according to Article 11 of the Code (ICZN 1999).
- <sup>69</sup> *Psilocephala* Zetterstedt, 1838: 525 (Diptera: Therevidae).
- <sup>70</sup> *Psilocephala imberbis* Fallén, 1814: 5 (*Bibio*) (Diptera: Therevidae).
- <sup>71</sup> The species-group name *confinis* Fallén, 1814: 12 (*Bibio*), is a subjective junior synonym of *rustica* Panzer, 1804: 21 (*Clorismia*) (Diptera: Therevidae).
- <sup>72</sup> Pierre Justin Marie Macquart (1778–1855).
- <sup>73</sup> *Ruppellia* Wiedemann, 1830: 625 (Diptera: Therevidae).
- <sup>74</sup> *Exapata* Macquart, 1840: 26, is a junior synonym of *Thereva* Latreille, 1797: 167 (Diptera: Therevidae).
- <sup>75</sup> *Xestomyza* Wiedemann, 1820: 10 (Diptera: Therevidae).
- <sup>76</sup> *Ploas* Latreille, 1804: 190, is a junior synonym of *Conophorus* Meigen, 1803: 268 (Diptera: Bombyliidae).
- <sup>77</sup> *Anabarhynchus* Macquart, 1848: 231 (Diptera: Therevidae).
- <sup>78</sup> *Ectinorhynchus* Macquart, 1850: 407 (Diptera: Therevidae).
- <sup>79</sup> As Macquart stated, assumptions that species of Therevidae are predaceous may have been due to the inferred meaning of name *Thereva*. Agassiz (1846a) translates "*Thereva*" (Gk., θερεω) into the Latin *venor*, which means "to hunt or chase" (Smith & Lockwood 1995); corresponding to the Greek word *therao*, which also means "hunt" (Brown 1956). More likely, *Thereva* is a diminutive for "beast" or "wild animal" ["therio-; thero- < Gr. *therion*; *theridion*; *theraphion*, beast dim. of *ther*, *theros*, wild animal; *therao*, hunt; *thereatron*, trap; see animal, hunt, trap" (Brown 1956: 789)]. Unfortunately, neither Latreille nor Fabricius give an etymology for *Thereva* in any of their works.
- <sup>80</sup> Jean Louis Rodolphe Agassiz (1807–1873).
- <sup>81</sup> In his *Index Universalis* to the *Nomenclator Zoologicus*, Agassiz (1846a, 1846b) emended "*Thereva*" with the spelling "*Thereua*." For further details, see the section of this work entitled "On the genus *Thereva* Latreille, 1797."
- <sup>82</sup> Francis Walker (1809–1874).
- <sup>83</sup> In 1857 and all subsequent works, Walker attributed "Therevites" to himself, not to Newman ("Newman, *Entomological Magazine*," see Newman 1854) as he did in 1851. Due to the formation of this name with the ending "-ites," "Therevites" is unavailable as a family-group name according to Article 11.7 of the Code (ICZN 1999).
- <sup>84</sup> Luigi Bellardi (1818–1889).
- <sup>85</sup> Rudolph Amando Philippi (1809–1904).

- <sup>86</sup> *Pachyrrhiza* Philippi, 1865: 703 (Diptera: Therevidae).
- <sup>87</sup> Camillo Rondani (1807–1879).
- <sup>88</sup> *Dialineura* Rondani, 1856: 155 (Diptera: Therevidae).
- <sup>89</sup> Karl [Carl, Carlos] Hermann [Gérman] Conrad [Conrado] Burmeister (1807–1892).
- <sup>90</sup> [Friedrich] Hermann Loew (1807–1879).
- <sup>91</sup> Kowarz [Ferdinand Kowarz (1838–1914)] was the only author other than Loew who used *Thereua* in combination with new species-group names. Kowarz proposed the name *amoena* [Kowarz, 1883: 242 (*Thereua*)], which is a subjective junior synonym of *lanata* Zetterstedt, 1838: 523 (*Thereva*) (Diptera: Therevidae).
- <sup>92</sup> A survey of the *Catalog of North American Diptera*, 1905, revealed that Loew described new species in at least 32 families; 22 of these species are stiletto flies. Coquillett probably surpassed Loew in terms of the taxonomic scope of his works, describing new species for the Nearctic Region in at least 34 families, 20 of which are stiletto flies. Lindroth (1973: 132), however, notes that Loew was the “dominating dipterist from the 1840s and for three decades to come” who “described, in an excellent way, more than 4000 species, Nematocera as well as Brachycera.”
- <sup>93</sup> Daniel William Coquillett (1856–1911).
- <sup>94</sup> Theodor Becker (1840–1928).
- <sup>95</sup> Shonen [Shyōnen] Matsumura (1872–1960).
- <sup>96</sup> Mario Bezzi (1868–1927).
- <sup>97</sup> P. Gabriel Strobl (1846–1925).
- <sup>98</sup> George Henry Verrall (1848–1914).
- <sup>99</sup> Emile Gobert (b. unknown–1927).
- <sup>100</sup> Ferdinand Kowarz (1838–1914).
- <sup>101</sup> Samuel Wendell Williston (1852–1918).
- <sup>102</sup> However, Williston gives a replacement name, *pachyceras* [Williston, 1908: 206 (*Thereva*)], for *crassicornis* Williston, 1886: 293 (*Thereva*) (Diptera: Therevidae). This name was overlooked in recent catalogs until S. D. Gaimari uncovered it in 1998 during his studies of *Ozodiceromyia*.
- <sup>103</sup> William Lundbeck (1863–1941).
- <sup>104</sup> The species descriptions of Verrall are excruciatingly detailed.
- <sup>105</sup> Carl [Charles] Robert [Romanovich] [Baron von] [der] Osten Sacken (1828–1906).
- <sup>106</sup> *Scenopinus* Latreille, 1802: 463 (Diptera: Scenopinidae).
- <sup>107</sup> *Tabuda* Walker, 1852: 197 (Diptera: Therevidae).
- <sup>108</sup> Ignatz Rudolph Schiner (1813–1873).
- <sup>109</sup> *Baryphora* Loew, 1844: 123 (Diptera: Therevidae).
- <sup>110</sup> *Cionophora* Egger, 1854: 1 (Diptera: Therevidae).
- <sup>111</sup> John Merton Aldrich (1866–1934).
- <sup>112</sup> Mario Bezzi (1868–1927).
- <sup>113</sup> Kalman Kertész (1872–1922).
- <sup>114</sup> *Pachyrrhiza* Philippi, 1865: 703 (Diptera: Therevidae).
- <sup>115</sup> Otto Kröber (1882–1969).
- <sup>116</sup> *Omphraliden*, the German equivalent to Omphralidae, is a family-group name derived from *Omphrale* Meigen, 1800. *Omphrale* is one of the genus-group names suppressed in *Nouvelle classification des mouches à deux ailes* by Opinion 863 (see endnote 56). Omphralidae is synonymous with Scenopinidae.
- <sup>117</sup> *Acrosathe* Irwin & Lyneborg, 1981a: 223 (Diptera: Therevidae).
- <sup>118</sup> *Ammoniaos* Irwin & Lyneborg, 1981a: 240 (Diptera: Therevidae).
- <sup>119</sup> *Irwinella* Lyneborg, 1976a: 251 (Diptera: Therevidae).
- <sup>120</sup> *Pseudothereva* Lyneborg, 1976a: 295 (Diptera: Therevidae).
- <sup>121</sup> *Spiriverpa* Irwin & Lyneborg, 1981a: 214 (Diptera: Therevidae).
- <sup>122</sup> *Cyclotelus* Walker, 1850: 4 (Diptera: Therevidae).
- <sup>123</sup> *Ozodiceromyia* Bigot, 1889: 321 (Diptera: Therevidae).
- <sup>124</sup> Frank Raymond Cole (1892–1988).
- <sup>125</sup> John Spencer Mann (1904–1994).
- <sup>126</sup> In reference to structures of the male terminalia, Cole writes, “These characters have been used very little in this paper, but ultimately they will be used more in the classification of the species, as they have been used in other groups of the Diptera.” (Cole 1923:7–8)
- <sup>127</sup> Arthur White (1871–1919).
- <sup>128</sup> George Hudlestone Hurlstone Hardy (1882–1966).
- <sup>129</sup> Enrico Adelmo Brunetti (1862–1927).
- <sup>130</sup> Richard Karl Hjalmar Frey (1886–1965).
- <sup>131</sup> John Russel Malloch (1875–1963).
- <sup>132</sup> Dilbert Elmo Hardy (1914–2002).
- <sup>133</sup> Stanley Willard Bromley (1899–1954).
- <sup>134</sup> See Footnote 116 on “*Omphraliden*.”
- <sup>135</sup> Eugène Ségué (1890–1985).
- <sup>136</sup> Kathleen M. I. English (1889–1977).
- <sup>137</sup> [Emil] [Hans] Willi Hennig (1913–1976).
- <sup>138</sup> John Russel Malloch (1875–1963).
- <sup>139</sup> Boris Borisovich Rohdendorf (1904–1977).
- <sup>140</sup> Rohdendorf’s superfamily “Asilidea” included Asilidae, Therevidae, Mydidae, Apioceridae, and Scenopinidae but not Bombyliidae.
- <sup>141</sup> Leif Lyneborg (b. 03.01.1932).
- <sup>142</sup> Collin, in his “British Therevidae (Diptera),” published by the *Proceedings of the Royal Physical Society*, writes in reference to accurate determinations of *Thereva plebeja*: “When the genital characters of this

- species have been recognised, British males can be identified with ease and certainty" (Collin 1948).
- <sup>143</sup> Akira Nagatomi (b. 1928).
  - <sup>144</sup> Michael Edward Irwin (b. 10.08.1940).
  - <sup>145</sup> *Pherocera* Cole, 1923: 20 (Diptera: Therevidae).
  - <sup>146</sup> Evert Irving Schlinger (b. 17.04.1925).
  - <sup>147</sup> Becker does not actually use the word "group" in his 1912 paper. For example, the "Thereva-Gruppe" of Kröber's 1925 paper is given by Becker as "Thereva Latr. und verwandte Gattungen" (Becker 1912a).
  - <sup>148</sup> David Keith Yeates (b. 28.12.1959).
  - <sup>149</sup> Yoshio Ôuchi.
  - <sup>150</sup> James Edward Collin (1876–1968).
  - <sup>151</sup> Maurice Theodore James (1905–1982).
  - <sup>152</sup> David Hollis (b. 1938).
  - <sup>153</sup> Przemyslaw Trojan (b. 1929).
  - <sup>154</sup> Marcos Baéz [Fumero] (b. 1951).
  - <sup>155</sup> Vadim Filopovich Zaitzev (b. 1934).
  - <sup>156</sup> *Apsilocephala* Kröber, 1914: 36 (Apsilocephalidae.) The family-level classification of this genus is uncertain, but the most recent studies place this genus in the family Apsilocephalidae with *Clesthentiella* (Nagatomi, Saigusa, Nagatomi & Lyneborg, 1991b: 589) although previous authors have placed it in Therevidae.
  - <sup>157</sup> Donald Wayne Webb (b. 12.07.1939).
  - <sup>158</sup> Shaun L. Winterton (b. 25.09.1969).
  - <sup>159</sup> Brian Michael Wiegmann (b., 12.10.1963).
  - <sup>160</sup> Longlong Yang.
  - <sup>161</sup> Jill Marie Metz (b. 15.05.1964).
  - <sup>162</sup> Stephen David Gaimari (b. 29.03.1968).
  - <sup>163</sup> F. Christian Thompson (b. 24.04.1944).
  - <sup>164</sup> Martin Hauser (b. 03.06.1967).
  - <sup>165</sup> Kevin Cornell Holston (b. 10.08.1972).
  - <sup>166</sup> Mark Andrew Metz (b. 16.02.1966).
  - <sup>167</sup> Gail Evelyn Purdum Kampmeier (b. 01.03.1951).
  - <sup>168</sup> Notice the use of "species diversity" here; the biogeographic index, in contrast, does not give a list of species, but of species-group names.
  - <sup>169</sup> *Ceria* Fabricius, 1794: 227, is an unavailable synonym for *Ceriana* Rafinesque, 1815: 177 (Diptera: Syrphidae).
  - <sup>170</sup> This unrecognized genus has the valid name *Tachydromia* Meigen, 1803: 269 (Diptera: Empididae).
  - <sup>171</sup> *Mulio* Fabricius, 1798: 548, is an unavailable synonym of *Chrysotoxum* Meigen, 1803: 275 (Diptera: Syrphidae).
  - <sup>172</sup> Fabricius also intentionally applied genus-group names to his revised circumscriptions of genera, with his treatment of *Bibio* (1775: 756, 1794: 254) and *Ceria* (1794: 277) demonstrating a disregard for name priority similar to that of Latreille in 1797. Neither *Bibio* nor *Ceria* are attributed to the original authors of these names, emphasizing the radical taxonomic difference between the generic concepts of Fabricius with those of Geoffroy and Scopoli concerning these names.
  - <sup>173</sup> Sabrosky, in his *Family Group Names in Diptera*, (1999: 306) gives the following entry for *Thereva*: "Thereva Latreille 1797: 167. No named species; one species in Latreille 1802: 441. Type, *Musca plebeja* Linnaeus 1758 (sub. mon., as *Bibio plebeja* F.) = *Thereva plebeja* (Linnaeus). Therevidae."
  - <sup>174</sup> Agassiz wrote "omnia nomina, quae in regno animalium et vegetabilium, vel in diversis unius regni animalis classibus familiisque duplicis sint usus, juxta se invicem ponere, ut facultas suppeditaretur definiendi jus prioratus uniuscujusque eorum, in quaeque amborum regnorum classe, itaque magis pateret necessitas Zoologiae nomenclaturae reformandae" as the second of his four objectives in publishing the *Index* (Agassiz 1846b).
  - <sup>175</sup> Agassiz wrote "occasionem habere illustrandi menda quibus scatent nomina illa, et corrigenda quae sunt minus mendosa, statu tamen rerum, ut hodie in nomenclatura systematica obtinet, minime immutato" as the third of his four objectives in publishing the *Index* (Agassiz 1846b).
  - <sup>176</sup> Agassiz used the medium-sized asterisk [\*] before "Thereva Fall." and a circle [°] before "Thereua Latr." in the *Index*, and explained the use of these symbols on page VI of the "Praefatio" as follows: "° equally indicates a name which serves the interest of twofold use; these distinctions, nevertheless, are represented by two categories [for] which the symbol \* merely is put before the double usage [=homonym], for which the valid orthography has been rewritten; in contrast, the actual symbol ° simply indicates double usage [=homonyms], corrected or uncorrected, in order to display the originator" ["° Nomina pariter designat, quae duplici usui inserviunt; hoc tamen discrimen inter duas categorias est tenendum, quod signum \* tantummodo ante ea duplicis usus nomina sit positum, quae ad meliorem orthographiam rescripta sunt; contra vero signum ° simpliciter designat duplicem usum, castigatum vel incastigatum, utcunque eum proposuit auctor."] (Agassiz 1846b).
  - <sup>177</sup> *Exapata* Macquart, 1840: 26, is a junior subjective synonym of *Thereva* Latreille, 1797: 167 (Diptera: Therevidae).
  - <sup>178</sup> *Athereva* Kröber, 1925: 26, is a junior subjective synonym of *Thereva* Latreille, 1797: 167 (Diptera: Therevidae).
  - <sup>179</sup> *Hermannia* Kröber, 1912b: 125, was replaced by *Hermannula* Strand, 1932: 195 (Diptera: Therevidae), due to homonymy with *Hermannia* Nicolet, 1855 (Acari: Oribatida: Hermannidae) (Lyneborg 1989).

SYSTEMATIC DATABASE OF *THEREVA* NAMES

## DATABASE DEVELOPMENT AND STRUCTURE

The database system used to generate the "Systematic Database of *Thereva* Names," Mandala(tm), was created by Gail Kampmeier and other members of an international research team studying the family Therevidae, headed by Michael E. Irwin. Using a FileMaker" Pro 6.0 engine, this relational database system is being used to compile, organize, and guide systematic research on Therevidae and has been improved during this research as a comprehensive nomenclatural resource on Therevidae. The "Systematic Database of *Thereva* Names" is a formatted subset of names records found in the "Names.fp3" file of Mandala™ and the CD-ROM publication of the same name (K.C.Holston, G.E. Kampmeier, & F. C. Thompson, in preparation for *Diptera Data Dissemination Disc*, Vol. 2, F. C. Thompson, ed.). Printed indices of *Thereva* species-group names that appear in this work were generated from records archived in the CD-ROM publication. Name and citation records were exported and then formatted within Microsoft" Word. Data presented herein were made available in part on the World Wide Web in 1999 in the biosystematic database on Therevidae.

## CHRONOLOGICAL SCOPE

All "*Thereva*" names found in the literature before 1 January 2002 have been included in the database.

## NOMENCLATURAL SCOPE

The "Systematic Database of *Thereva* Names" includes 483 "*Thereva*" name records: 318 are records for valid species-group names, 92 are for invalid species-group names, and 73 are for unavailable species-group names. Of these 483 records, 203 refer to valid binomial names in *Thereva*. Six of the species-group names in the "Systematic Database of *Thereva* Names" refer to fossil taxa. Available (valid and invalid) and unavailable species-group names are included in all versions of this database, excluding most instances of subsequent usage. Names published with incorrect attribution, as subsequent usage that have been mistaken as original descriptions in the literature (e.g., species-group names in Meigen, 1851; Macquart, 1841; and Fallén, 1820),

are recorded with corrections and notes for clarification.

## TAXONOMIC SCOPE

The Systematic Database of *Thereva* Names includes species-group names for taxa currently dispersed among 47 valid genera, including *Thereva*. Most of these genera belong to the family Therevidae; other genera are in Asilidae, Syrphidae, and Tachinidae. However, there are 14 additional genus-group names that were originally combined with *Thereva* species-group names. These genus-group names refer to genera in the following families: Anisopodidae, Bibionidae, Muscidae, Mydidae, Rhagionidae, Stratiomyidae, Syrphidae, and Tabanidae. A list of these genera and the *Thereva* species-group names associated with them is presented as Appendix II.

## BIOGEOGRAPHIC SCOPE

The Systematic Database of *Thereva* Names includes species-group names for taxa found in the Afrotropical, Australasian, Oceanian, Nearctic, Neotropical, Oriental, and Palaearctic biogeographic regions.

## FORMAT

The records that make up the Systematic Database of *Thereva* Names are, in principle, like any subset of records from the "Names.fp3" file from which the data were retrieved. This particular subset is made up of records for all published species-group name combinations (i.e., binomial or trinomial combinations) that were formed with the genus-group name *Thereva*. Each unique combination of *Thereva* and a species-group name (i.e., species epithet) forms a unique record; thus a species-group name can be found as part of several records of the "Names.fp3" file. Name combinations for species, not the species-group names, are given unique numerical identifiers in the computer-driven database, as well as uninomial names (e.g., genus, subfamily, family). Use of species epithets as primary records decreases the total number of records in a computer database file but restricts the scope of the database to valid name records. The identification, organization, and characterization of species-group names in combinations within a relational database that

makes references to valid and invalid name combinations is made possible with this approach.

To illustrate, the species-group name "*plebeja* Linnaeus, 1758: 589" appears in record 2865 (*Musca plebeja* Linnaeus, 1758: 589); record 3607 (*Bibio plebeja* (Linnaeus, 1758: 589)); and record 582 (*Thereva plebeja* (Linnaeus, 1758: 589)). These three name combinations are linked by their valid name, record 582 (*Thereva plebeja* (Linnaeus, 1758: 589)). A specimen determined as "*Bibio plebeja* (L.)" can be linked in the relational database to its valid name while the invalid determination of the specimen is accurately recorded. In most printed nomenclatural databases (e.g.; faunistic catalogs) the species-group name "*plebeja* Linnaeus, 1758: 589" would appear once under the genus name/section heading "*Thereva* Latreille, 1797: 167." The printed version of the "Systematic Database of *Thereva* Names" presented herein follows the catalog format, with each unique species-group name record appearing only once per index.

The names of the "Systematic Database of *Thereva* Names" are presented in three indices. Appendix I is an alphabetic index, Appendix II is a taxonomic index organized by (genus) taxonomic position, and Appendix III is a biogeographic index organized by the explicitly stated or inferred biogeographic region of the type-specimen(s).

In the alphabetical index of *Thereva* species-group names (Appendix I), the following format was developed to present each species-group name record. This format is modified from Thompson and Pont (1994). A significant departure from the format developed by Thompson & Pont for *Musca* names is the treatment of type-specimen data. The depositories of type specimens are not presented in this work because the data at hand for the majority of *Thereva* types are either missing or unverified by recent study. Nomenclatural literature was the primary source of the type specimen data reported, augmented by limited examination of type specimens.

**species-group name** Author, year of publication: page of indication and/or description (*Original genus*). Type specimen biogeographic region Status code and description for species-group name and binomial [*binomial name reference for status*]. *Valid binomial name*  
Author, year of publication: page of indica-

tion and/or description. Citation number for name status Family classification of valid name. [Comments and further information].

Species-group names in bold print (e.g., **bold**) are valid, names in italics (e.g., *italics*) are invalid, and names in normal type (e.g., normal) are unavailable.

Lowercase letters directly after the year of publication refer to the full citation given in the list of Literature Cited.

With name records of fossils, "FOSSIL" is intercalated between the "Type specimen biogeographic region" and the "Status code for species-group name and binomial."

For the type-specimen biogeographic region, the following abbreviations are used:

AF = Afrotropical Region,  
AU = Australasian/Oceanian Region,  
NE = Nearctic Region,  
NT = Neotropical Region,  
OR = Oriental Region,  
PA = Palaearctic Region.

Biogeographic regions are defined in the following works: *Manual of Nearctic Diptera* (Irwin & Lyneborg 1981b), *Catalogue of Palaearctic Diptera* (Lyneborg 1989), *Catalog of the Australasian and Oceanian Regions* (Irwin & Lyneborg 1989), *Catalogue of the Diptera of the Afrotropical Region* (Lyneborg 1980), *A Catalogue of the Diptera of the Oriental Region* (Lyneborg 1975), and *A Catalogue of the Diptera of the Americas South of the United States* (Papavero 1966). The Australasian and Oceanian Regions are combined in this work, following the most recent faunistic catalog of Diptera that groups these two biogeographic regions (Evenhuis 1989).

A key to the numerical codes and descriptions used for "Status code of species-group name and binomial" is given below.

- 10 Available, valid: [no change]
- 12 Available, valid: not recognized (*nomen dubium*)
- 13 Available, valid: corrected spelling
- 15 Available, valid: new status
- 18 Available, valid: replacement name
- 20 Available, invalid: junior objective synonym
- 21 Available, invalid: junior subjective synonym
- 22 Available, invalid: dubious synonym
- 26 Available, invalid: new (junior) synonym

- 27 Available, invalid: unjustified new name
- 30 Available, invalid: junior homonym
- 34 Available, invalid: primary junior homonym
- 36 Available, invalid: secondary junior homonym
- 40 Available, invalid: unjustified emendation
- 48 Available, invalid: obsolete combination/rank
- 49 Available, invalid: incorrect spelling of genus-group name in original combination.
- 50 Unavailable
- 51 Unavailable: suppressed by ICZN
- 52 Unavailable: published anonymously after 1950
- 53 Unavailable: published conditionally after 1960
- 54 Unavailable: infrasubspecific name proposed after 1960
- 55 Unavailable: *nomen nudum*
- 56 Unavailable: incorrect original spelling of species-group name
- 57 Unavailable: improper formation of species-group name
- 58 Unavailable: published in synonymy and not subsequently valid
- 59 Unavailable: proposed without type designation
- 60 Unavailable: misspelling
- 70 Unavailable: misidentification
- 80 Unavailable: subsequent usage

The status refers primarily to the current status of the species-group name and secondarily to that of the binomial. Status of the species-group name is also indicated by the typeset used for the name (see above).

The bracketed section "binomial name reference for status" gives the binomial name that is directly related to the status code and description but is not the valid name. This includes emended names, replacement names, misspelled names, misidentifications, senior homonyms, and invalid subsequent combinations. Nested brackets within this section link names to the "binomial name reference for status" through the status code and description for the "binomial name reference for status," and the data in nested brackets serve to clarify the relationship between the name record and the given valid name.

An example of this nested bracket format is the record for "coleoptrata Latreille, 1805: 379."

coleoptrata Latreille, 1805: 379 (*Thereva*). PA 60  
 Unavailable: misspelling [*Thereva subcoleoptrata* Fabricius, 1798: 560. [80 Unavailable:

subsequent usage. *Syrphus subcoleoptratus* Fabricius, 1775: 284. [70 Unavailable: misidentification. *Conops subcoleoptratus* Linnaeus, 1767: 1006. [48 Available, invalid: obsolete combination/rank. *Phasia subcoleoptrata* (Linnaeus, 1767: 1006)]]]. **Phasia hemiptera** (Fabricius, 1794: 284). NEW Tachinidae.

*Thereva* "coleoptrata Latreille, 1805: 379," is a misspelling of *Thereva subcoleoptrata* Fabricius, 1798: 560; which is an unavailable subsequent usage of *Syrphus subcoleoptratus* Fabricius, 1775: 284; which is a misidentification of *Conops subcoleoptratus* Linnaeus, 1767: 1006; which is an obsolete combination for *Phasia subcoleoptrata* (Linnaeus, 1767: 1006). The valid name for *Thereva* "coleoptrata Latreille, 1805: 379," is *Phasia hemiptera* (Fabricius, 1794: 284). In the computer-based version of the Systematic Database of *Thereva* Names, these data are captured and retrieved through links to name records from the name record of interest. The complex, often reticulated relationships among names are difficult to describe in the traditional catalog format; and the method of linking records within an electronic medium, as employed in this project, facilitates a greater breadth of data capture and dissemination.

The "Citation number for name status" is a six-digit number in bold after the valid name that refers to the most recently published reference establishing the valid name relationship given in this work. These numbers are the unique identifiers used in the literature file, "Reprints.fp3," of the computer version of the database. Names with revised status established during this research have "NEW" instead of a number in this position. A key to these citation identifiers is given in Table 4, in which the taxonomic and geographical scope for each reference is given. Full citations for these references are given in the bibliography.

Additional comments and information concerning a name are given at the end of each name record, subtended by square brackets. These notes refer to information found in the comments field of the name records in the computer version of the database.

Details of names are omitted from the taxonomic (Appendix II) and biogeographic (Appendix III) indices. In the taxonomic index, the species-group name is given with the author under the relevant genus-group name heading and

Table 4. Key to the valid name identification numbers\* used in "Appendix I: Alphabetic Index," of the "Systematic Database of *Thereva* Names."

Number	Author	Year	Publication Type	Taxon	Region
100052	Czerny, L. & G. Strobl	1909	faunal	Diptera	PA (Spain)
100068	Kröber, O.	1913d	catalog	Therevidae	WORLD
100069	Kröber, O.	1925	catalog	Therevidae	PA (Europe)
100076	Irwin, M. E. & L. Lyneborg	1989	catalog	Therevidae	AU
100085	Cole, F. R.	1965	catalog	Therevidae	NE
100095	Brunetti, E.	1920	faunal	Diptera	OR (India)
100098	Lyneborg, L.	1976b	monograph	Therevinae	AF
100130	Irwin, M. E. & L. Lyneborg	1981	monograph	Therevidae	NE
100136	Kertész, K.	1909	catalog	Diptera	WORLD
100104	Meigen, J. W.	1804	monograph	Diptera	PA (Europe)
100105	Meigen, J. W.	1820	monograph	Diptera	PA (Europe)
100151	Lyneborg, L.	1992	monograph	Therevidae	AU (New Zealand)
100177	Williston, S. W.	1908	faunal	Diptera	NE
100183	Lyneborg, L.	1986b	monograph	<i>Acrosathe</i>	PA, OR
100246	Evenhuis, N. L.	1994	catalog	Diptera	WORLD [FOSSIL]
100317	Fallén, C. F.	1814	monograph	Diptera	PA (Sweden)
100319	Irwin, M. E. & D. W. Webb	1992	monograph	Therevidae	NT (Brazil)
100322	Lyneborg, L.	1989	catalog	Therevidae	PA
100325	Lyneborg, L.	1987	species description	<i>Thereva mirabilis</i>	PA (Tunisia)
100361	Webb, D. W. & M. E. Irwin	1991	monograph	Therevidae	NT (Brazil)
100390	Illiger, J.K.W.	1807	faunal	Insecta	PA (Italy)
100446	Bezzi, M.	1903	catalog	Diptera	PA
100462	Lyneborg, L.	1975	catalog	Therevidae	OR
100463	Lyneborg, L.	1980	catalog	Therevidae	AF
100464	Malloch, J. R.	1932	monograph	Therevidae	NT (Patagonia, Chile)
100672	Peck, L. V.	1988	catalog	Syrphidae	PA
100671	Ortiz, C. S.	1946	catalog	Diptera	NT (Chile)
100673	Herting, B. & A. Dely-Draskovits	1993	catalog	Tachinidae	PA
100690	Lyneborg, L.	1986a	faunal	Therevidae	PA

\*Full citations for these references are given in "Literature Cited."

separated from other entries by a comma. In the biogeographic index, the species-group name is given with the author under the relevant biogeographic region heading and separated from the other entries by a comma. The status of a species-group name is not given in these two indices.

#### STATUS OF NAMES

The status of names presented in the "Systematic Database of *Thereva* Names" is given by the numerical codes listed and defined above. These codes give both the status of the species-group name and the status of the species name (i.e., binomial or trinomial). Designation of name status follows the Fourth Edition of the *International Code of Zoological Nomenclature*, 2000, and the protocol for designating the status of species-group names follows the "Systematic Database of *Musca* Names" (Thompson & Pont 1994). Junior homonyms identified as a result of this work are not renamed, but stand unchanged with their senior homonyms.

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## APPENDIX I: ALPHABETIC INDEX

- abdominalis** Fabricius, 1805: 68 (*Bibio*). NT 48 Available, invalid: obsolete combination/rank. *Brachylinga abdominalis* (Fabricius, 1805: 68). 100354 Therevidae.
- aethiopica** Bezzi, 1906: 264 (*Thereva*). AF 48 Available, invalid: obsolete combination/rank. *Pseudothereva aethiopica* (Bezzi, 1906: 264). 100098 Therevidae.
- affinis** Fabricius, 1794: 284 (*Syrphus*). PA 48 Available, invalid: obsolete combination/rank [*Phasia affinis* (Fabricius, 1794: 284). [21 Available, invalid: junior subjective synonym. *Phasia hemiptera* (Fabricius, 1794: 284)]]]. *Phasia hemiptera* (Fabricius, 1794: 284). 100296 Tachinidae.
- affinis** Kröber, 1913: 31 (*Thereva*). PA 10 Available, valid: [no change] *Thereva affinis* Kröber, 1913: 31. 100322 Therevidae.
- alaimontana** Kröber, 1925: 28 (*Thereva*). PA 27 Available, invalid: unjustified new name [*Hermannia lanata* Kröber, 1912: 26. [21 Available, invalid: junior subjective synonym. *Hermannula lanata* (Kröber, 1912: 26)]]]. *Hermannula lanata* (Kröber, 1912: 26). 100322 Therevidae. [Kröber (1925: 28) originally proposed *Thereva* (*Hermannia*) *alaimontana* as a replacement name for *Thereva* (*Hermannia*) *lanata* Kröber, 1912: 26, a name preoccupied by *Thereva lanata* Zetterstedt, 1838: 523].
- albibarba** Kröber, 1912: 704 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva albibarba* Kröber, 1912: 704. 100322 Therevidae.
- albicans** Macquart, 1834: 421 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Dialineura albicans* (Macquart, 1834: 421). [21 Available, invalid: junior subjective synonym. *Dialineura anilis* (Linnaeus, 1760: 442)]]]. *Dialineura anilis* (Linnaeus, 1760: 442). 100136 Therevidae.
- albiceps** Loew, 1869: 166 (*Thereva*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva albiceps* Loew, 1869: 166. [48 Available, invalid: obsolete combination/rank. *Spiriverpa albiceps* (Loew, 1869: 166)]]]. *Spiriverpa albiceps* (Loew, 1869: 166). 100130 Therevidae.
- albifrons** Say, 1829: 156 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Spiriverpa albifrons* (Say, 1829: 156). 100130 Therevidae.
- albilabris** Megerle, [unknown]: [unknown] (*Bibio*). PA 51 Unavailable: suppressed by ICZN. *Thereva unica* (Harris, 1779: 103) NEW Therevidae [The Megerle auction catalogs (1801–1805) were suppressed from nomenclature by ICZN Opinion 1710 (ICZN 1993)].
- albilabris** Meigen, 1820: 122 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103). 100456 Therevidae. [Meigen (1820: 122) diagnosed his species 10 of *Thereva* under the name "Th. albilabris. Meg." and notes that the specimen is from "Osterreich; von Herrn Megerle von Mühlfeld." The Megerle auction catalogs (1801–1805) were suppressed from nomenclature by ICZN Opinion 1710 (ICZN 1993). The second edition of Meigen's 1820 work presents a subsequent usage: *Thereva albilabris* Meigen, 1851: 93].
- albina** Wiedemann, 1819: 3 (*Thereva*). OR 48 Available, invalid: obsolete combination/rank. *Irwiniella albina* (Wiedemann, 1819: 3). 100691 Therevidae.
- albipennis** Meigen, 1820: 119 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103). 100456 Therevidae. [The second edition of Meigen's 1820 work presents a subsequent usage: *Thereva albipennis* Meigen, 1851: 91].
- albipennis** Zetterstedt, 1842: 207 (*Thereva*). PA 70 Unavailable: misidentification [*Thereva albipennis* Meigen, 1820: 119. [21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103)]]]. *Thereva marginula* Meigen, 1820: 120. 100696 Therevidae. [Schiner, in *Fauna Austriaca* (1860: 166), first identified *Thereva albipennis* of Zetterstedt (1842: 207) as a junior synonym (=misidentification) of *Thereva marginula* Meigen. This was followed by later authors: Bezzi (1903: 209), Kertész (1909: 155), Kröber (1913d: 58) and Lyneborg (1989: 30)].
- albipes** Eversmann, 1834: 423 (*Thereva*). PA 55 Unavailable: *nomen nudum*. *Aristothereva eversmanni* Zaitzev, 1971: 63. 100446 Therevidae. [Zaitzev (1971a: 63) and Lyneborg (1989: 17) listed *Thereva albipes* Eversmann, 1834: 423, as both a *nomen nudum* and junior synonym of *Aristothereva eversmanni* Zaitzev, 1971: 63].
- albiventris** Philippi, 1865: 770 (*Thereva*). NT 10 Available, valid: [no change] *Thereva albiventris* Philippi, 1865: 770 NEW Therevidae. [Malloch (1932: 243) and Ortiz (1946: 86) listed "? *Thereva chilensis*, Macquart" as a synonym of *Thereva albiventris* Philippi, 1865: 770, although a formal synonymy of these two names has not been established. Ortiz (1946: 86) treated *Thereva albiventris* Philippi, 1865: 770, as a valid name and did not recognize *Thereva chilensis* Macquart, 1840: 25, as a valid name for the Chilean therevid fauna].
- albohirta** Kröber, 1912: 685 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva albohirta* Kröber, 1912: 685. 100322 Therevidae.
- albohirta** Kröber, 1933: 298 (*Thereva*). AF 70 Unavailable: misidentification [*Psilocephala albohirta* Ricardo, 1903: 361.

- [48 Available, invalid: obsolete combination/rank. *Irwiniella albohirta* (Ricardo, 1903: 361)]. *Thereva analis* Kröber, 1912: 405. 100098 Therevidae.
- albopilosa** Kröber, 1912: 256 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva albopilosa* Kröber, 1912: 256. 100130 Therevidae.
- albovittata** Strobl, 1909: 294 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva albovittata* Strobl, 1909: 294. 100322 Therevidae. [This name is properly cited as *Thereva albovittata* Strobl in Czerny & Strobl, 1909: 294].
- algerica** Kröber, 1913: 53 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva algerica* Kröber, 1913: 24 [21 Available, invalid: junior subjective synonym. *Thereva tuberculata* Loew, 1847: 13]]. *Thereva tuberculata* Loew, 1847: 13. NEW Therevidae. [Kröber used the spelling “algerica” for *Thereva algerica* Kröber, 1913: 24, in *Genera Insectorum* (Kröber 1913d: 53) and in his catalog of Palaearctic Therevidae (Kröber 1937: 277, 313). Lyneborg (1989: 34) also used the spelling “algerica” without mention of the spelling “algerica.”]
- algerica** Kröber, 1913: 24 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva tuberculata* Loew, 1847: 13. NEW Therevidae. [Kröber used the spelling “algerica” for *Thereva algerica* Kröber, 1913: 24, in *Genera Insectorum* (1913: 53) and in his catalog of Palaearctic Therevidae (1937: 277, 313). Lyneborg (1989: 34) also used the spelling “algerica” without mention of the spelling “algerica.”]
- alpina** Egger, 1859: 404 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva brevicornis* Loew, 1847: 41. 100456 Therevidae.
- amoena** Kowarz, 1883: 242 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Thereva amoena* Kowarz, 1883: 242. [21 Available, invalid: junior subjective synonym. *Thereva lanata* Zetterstedt, 1838: 523]. *Thereva lanata* Zetterstedt, 1838: 523. 100446 Therevidae.
- analis** Fabricius, 1798: 561 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Ectophasia analis* (Fabricius, 1798: 561). 21 Available, invalid: junior subjective synonym. *Ectophasia crassipennis* (Fabricius, 1794: 284)]. *Ectophasia crassipennis* (Fabricius, 1794: 284). 100446 Tachinidae.
- analis** Kröber, 1912: 405 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva analis* Kröber, 1912: 405. 100098 Therevidae.
- angustifrons** Kröber, 1912: 686 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva handlirschi* Kröber, 1912: 696. 100322 Therevidae.
- anilis** Fabricius, 1775: 757 (*Bibio*). PA 70 Unavailable: misidentification [*Musca anilis* Linnaeus, 1760: 442 [48 Available, invalid: obsolete combination/rank. *Dialineura anilis* (Linnaeus, 1760: 442)]]. *Acrosathe annulata* (Fabricius, 1805: 68). 100184 Therevidae.
- anilis** Fabricius, 1781: 413 (*Bibio*). PA 80 Unavailable: subsequent usage [*Bibio anilis* Fabricius, 1775: 757]. *Acrosathe annulata* (Fabricius, 1805: 68). NEW Therevidae.
- anilis** Schellenberg, 1803: 29 (*Bibio*). PA 70 Unavailable: misidentification [*Musca anilis* Linnaeus, 1760: 442. [48 Available, invalid: obsolete combination/rank. *Dialineura anilis* (Linnaeus, 1760: 442)]]. *Acrosathe annulata* (Fabricius, 1805: 68). NEW Therevidae. [The figures of a therevid which Schellenberg (1803: 29) labeled as “*Bibio analis*” are identified as *Acrosathe annulata* (Fabricius, 1805: 68), not *Dialineura anilis* (Linnaeus, 1760: 442), based primarily on the details of the antennae. Bezzi (1903: 207) and Kertész (1909: 167) considered *Bibio anilis* Schellenberg, 1803: 29, a prior reference to *Thereva anilis* (Linnaeus, 1760: 442) and *Dialineura anilis* (Linnaeus, 1760: 442), respectively].
- anilis** Schrank, 1803: 91 (*Bibio*). PA 70 Unavailable: misidentification [*Bibio anilis* (Linnaeus, 1760: 442). [48 Available, invalid: obsolete combination/rank. *Dialineura anilis* (Linnaeus, 1760: 442)]]. *Acrosathe annulata* (Fabricius, 1805: 68). 100105 Therevidae.
- anilis** Meigen, 1804: 215 (*Bibio*). PA 70 Unavailable: misidentification [*Bibio anilis* (Linnaeus, 1760: 442). [48 Available, invalid: obsolete combination/rank. *Dialineura anilis* (Linnaeus, 1760: 442)]]. *Acrosathe annulata* (Fabricius, 1805: 68). 100317 Therevidae.
- anilis** Linnaeus, 1760: 442 (*Musca*). PA 48 Available, invalid: obsolete combination/rank. *Dialineura anilis* (Linnaeus, 1760: 442). 100296 Therevidae.
- anilis** Latreille, 1809: 296 (*Thereva*). PA 80 Unavailable: subsequent usage [*Musca anilis* Linnaeus, 1760: 442]. *Dialineura anilis* (Linnaeus, 1760: 442). 100036 Therevidae. [Meigen (1820: 118) recognized *Thereva anilis* Latreille, 1809: 296, as a synonym of *Thereva anilis* (Linnaeus, 1760: 442)].
- annulata** Fabricius, 1805: 68 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank. *Acrosathe annulata* (Fabricius, 1805: 68). 100184 Therevidae.
- annulata** Macquart, 1839: 106 (*Thereva*). PA 70 Unavailable: misidentification [*Thereva annulata* (Fabricius, 1805: 68). [48 Available, invalid: obsolete combination/rank. *Acrosathe annulata* (Fabricius, 1805: 68)]]. *Irwiniella frontata* (Becker, 1908: 23). 100050 Therevidae. [Becker considered *Thereva annulata* Bigot, 1891, a misidentification (interpreted here as a subsequent use) of *Thereva annulata* Macquart, 1839].

- annulata* Zetterstedt, 1842: 210 (*Thereva*). PA 80 Unavailable: subsequent usage [*Thereva annulata* (Fabricius, 1805: 68)]. *Acrosathe annulata* (Fabricius, 1805: 68). NEW Therevidae.
- annulata* Jaennicke, 1867: 79 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva annulata* (Fabricius, 1805: 68)]. *Acrosathe annulata* (Fabricius, 1805: 68). NEW Therevidae.
- anomala* Adams, 1904: 444 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia anomala* (Adams, 1904: 444). 100130 Therevidae.
- anthracina* Loew, 1858: 337 (*Thereua*). AF 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva anthracina* Loew, 1858: 337. [48 Available, invalid: obsolete combination/rank. *Neotabuda anthracina* (Loew, 1858: 337)]. *Neotabuda anthracina* (Loew, 1858: 337). 100148 Therevidae. [Lyneborg (1980: 315) listed "*anthracina* Loew, 1858d: 7 [1860c: 127] (*Thereua*)" as a species under *Pachygenia* Kröber. Following the pagination given by Kröber 1913d: 53, and after an examination of the 1860 Berlin publication of Loew's 1859 work on South African Diptera, the date and pagination of two subsequent usages of *Thereva anthracina* Loew are given herein as 1860: 127 ["Halle"], and 1860: 55 ["Berlin"]. The "Halle" publication (*Abh. naturw. Ver. Sachsen u. Thüringen in Halle*, 1860) has not been examined].
- anthracoides* Macquart, 1840: 27 (*Exapata*). PA 48 Available, invalid: obsolete combination/rank. [*Thereva anthracoides* (Macquart, 1840: 27). [21 Available, invalid: junior subjective synonym. *Thereva cincta* Meigen, 1820: 117]]. *Thereva cincta* Meigen, 1820: 117. 100136 Therevidae. [The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Exapata anthracoides* Macquart, 1841: 305].
- aperta* Macquart, 1846: 231 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus apertus* (Macquart, 1846: 231). 100076 Therevidae. [The separate of this article (Macquart 1846b) presents a subsequent usage of this name: *Thereva aperta* Macquart, 1846: 103].
- apicalis* Wiedemann, 1821: 111 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva apicalis* Wiedemann, 1821: 111. 100322 Therevidae.
- apicalis* Walker, 1852: 162 (*Thereva*). Patria ignota 48 Available, invalid: obsolete combination/rank. *Anabarhynchus apicalis* (Walker, 1852: 162). 100076 Therevidae.
- apicalis* Bertoloni, 1861: 89 (*Thereva*). AF 12 Available, valid: not recognized (*nomen dubium*). *Thereva apicalis* Bertoloni, 1861: 89. 100098 Rhagionidae. [In the catalog to Afrotropical Diptera, Stuckenberg (1980: 311) listed *Thereva apicalis* Bertoloni, 1861: 89, in the Rhagionidae chapter as "unplaced Rhagionidae"].
- apicalis hispanica* Strobl in Czerny & Strobl, 1909: 170 (*Thereva*). PA 20 Available, invalid: junior objective synonym. *Thereva hispanica* Strobl in Czerny & Strobl, 1909: 170. 100321 Therevidae. [Strobl proposed *Thereva apicalis hispanica* Strobl, 1909: 170, as a subspecies of *Thereva apicalis* Wiedemann: "*apicalis* Weid. subsp. *hispanica*" (Strobl in Czerny & Strobl 1909: 170). Kröber (1912: 701), in his revision of Afrotropical and Palaearctic Therevidae, raised the name "*hispanica* Strobl, 1909: 170," from subspecies to species rank in *Thereva* without acknowledging the change.
- appendiculata* Macquart, 1840: 23 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank. *Brachylinga appendiculata* (Macquart, 1840: 23). 100319 Therevidae. [The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva appendiculata* Macquart, 1841: 301].
- arcuata* Kröber, 1912: 252 (*Caenozona*). PA 36 Available, invalid: junior homonym, secondary [*Thereva arcuata* Loew, 1847: 9. [21 Available, invalid: junior subjective synonym. *Thereva cincta* Meigen, 1820: 117]]. *Thereva semirufa* Kröber, 1912: 687 [Senior subjective synonym of *Thereva arcuata* Kröber, 1912: 252]. 100074 Therevidae.
- arcuata* Loew, 1847: 9 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva arcuata* Loew, 1847: 9. [21 Available, invalid: junior subjective synonym. *Thereva cincta* Meigen, 1820: 117]]. *Thereva cincta* Meigen, 1820: 117. 100696 Therevidae. [Bezzi, in the Palaearctic catalog of Diptera (1903: 208), listed *Thereva arcuata* (Loew, 1847: 9) as the valid name for its senior synonym. *Thereva taeniata* Meigen, 1820: 120. *Thereva arcuata* Loew was treated as a valid name until Lyneborg & Spitzer (1974: 22) synonymized it with *Thereva cincta* Meigen].
- arcuata inornata* Verrall, 1909: 556. (*Thereva*). PA 20 Available, invalid: junior objective synonym. *Thereva inornata* Verrall, 1909: 556. 100322 Therevidae. [Verrall proposed *Thereva inornata* as a variety of *Thereva arcuata* Loew, 1847: 9, making the original rank for this name "subspecies" according to Article 45.6 of the Code (ICZN 1999). Lyneborg (1989: 29) raised *Thereva inornata* Verrall to species].
- ardea* Fabricius, 1794: 272 (*Rhagio*). PA 48 Available, invalid: obsolete combination/rank [*Thereva ardea* (Fabricius, 1794: 272). [48 Available, invalid: obsolete combination/rank. *Psilocephala ardea* (Fabricius, 1794: 272). [48 Available, invalid: obsolete combination/rank. *Clorismia ardea* (Fabricius, 1794: 272)]]]. *Clorismia ardea* (Fabricius, 1794: 272). 100182 Therevidae.
- argentata* Bellardi, 1861: 89 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia argentata* (Bellardi, 1861: 89). 100139 Therevidae.

- argentea* Kröber, 1912: 401 (*Thereva*). AF 21 Available, invalid: junior subjective synonym. *Thereva analis* Kröber, 1912: 405. 100098 Therevidae.
- argenteolanata* Frey, 1921: 84 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva argenteolanata* Frey, 1921: 84. 100322 Therevidae.
- arida* Walker, 1857: 133 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Platycarenum aridum* (Walker, 1857: 133). 100471 Therevidae. [Mann (1928: 160) first moved *Thereva arida* Walker, 1857: 133, into the genus *Platycarenum* by treating it as a junior synonym of *Platycarenum quinquevittata* (Macquart), along with *Platycarenum porrectifrons* Kröber and *Anabarhynchus pallidus* White].
- asiatica* Kröber, 1913: 256 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva aureomaculata* Kröber, 1912: 695. 100069 Therevidae.
- athericiformis* Kröber, 1912: 681 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva aurantiaca* Becker, 1913: 547. 100069 Therevidae.
- atistriata* Kröber, 1925: 87 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva latistriata* Kröber, 1913: 156]. *Thereva strigata* (Fabricius, 1794: 255). NEW Therevidae.
- atra* Kröber, 1913: 31 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva atra* Kröber, 1913: 31. 100322 Therevidae.
- atripes* Loew, 1847: 43 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva atripes* Loew, 1847: 43. 100446 Therevidae.
- aurantiaca* Becker in Becker & Stein, 1913: 547 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva aurantiaca* Becker in Becker & Stein, 1913: 547. 100322 Therevidae. [Lyneborg (1989: 26) gave the attribution and date for *T. aurantiaca* as "Becker, 1912: 547" in his chapter on Therevidae in the *Catalog of Palaearctic Diptera*].
- aurata* Loew, 1854: 1 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva aurata* Loew, 1854: 1. 100446 Therevidae.
- aurata* Harris, 1835: 596 (*Thereva*). NE 55 Unavailable: *nomen nudum*. [*Thereva aurata* Harris, 1835: 596 is in the list of "Unplaced species of [Nearctic] Therevidae" as a *nomen nudum* (Irwin & Lyneborg 1981: 270)].
- aureomaculata* Kröber, 1912: 695 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva aureomaculata* Kröber, 1912: 695. 100322 Therevidae.
- aureoscutellata* Kröber, 1914: 72 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva aureoscutellata* Kröber, 1914: 72. 100322 Therevidae.
- auricincta* Egger, 1859: 400 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva aurata* Loew, 1854: 1. 100136 Therevidae. [Egger (1859: 400) proposed *Thereva auricincta* as a species, not as a variety. Kertész (1909: 151) listed *Thereva auricincta* Egger as a variety of *Thereva aurata* Loew, 1854: 1. Kröber (1912: 674, 1913: 54) considered *Thereva auricincta* Egger a junior synonym of *Thereva aurata* Loew].
- aurofasciata* Kröber, 1912: 263 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva aurofasciata* Kröber, 1912: 263. 100130 Therevidae.
- bakeri* Cole, 1923: 124 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva bakeri* Cole, 1923: 124. 100130 Therevidae.
- basalis* Loew, 1858: 336 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva basalis* Loew, 1858: 336. [48 Available, invalid: obsolete combination/rank. *Ruppellia basalis* (Loew, 1858: 336)]]]. *Ruppellia basalis* (Loew, 1858: 336). 100463 Therevidae. [Lyneborg (1980: 316) listed "*basalis* Loew, 1858d: 336 [1860c: 127] (*Thereua*)" as a species under *Ruppellia* Wiedemann. Following the pagination given by Kröber 1913d: 29, and after an examination of the 1860 Berlin publication of Loew's 1859 work on South African Diptera, the date and pagination of two subsequent usages of *Thereva anthracina* Loew are given herein as 1860: 127 ["Halle"], and 1860: 55 ["Berlin"]. The "Halle" publication (*Abh. naturw. Ver. Sachsen u. Thüringen in Halle*, 1860) has not been examined].
- becquarti* Kröber, 1924: 104 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva bequaerti* Kröber, 1914: 73]. *Thereva bequaerti* Kröber, 1914: 73. NEW Therevidae. [Kröber (1937: 278, 298) used "becquarti" in his catalog of Palaearctic Therevidae as well as in 1924. Lyneborg (1989: 26) used the original spelling, "bequaerti," in his chapter on Therevidae in the *Catalog of Palaearctic Diptera*].
- bella* Kröber, 1914: 64 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Spiriverpa bella* (Kröber, 1914: 64). 100130 Therevidae.
- bella nigrimana* Kröber, 1914: 65 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Spiriverpa bella nigrimana* (Kröber, 1914: 65). 100130 Therevidae. [Kröber (1914: 65) originally proposed *Thereva bella nigrimana* as a variety of *Thereva bella* Kröber, 1914: 64 ("*Thereva bella* var. *nigrimana*"), making the original rank for this name "subspecies" according to Article 45.6 of the Code (ICZN 1999)].
- bequaerti* Kröber, 1914: 73 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva bequaerti* Kröber, 1914: 73. 100322 Therevidae.

- bicinctella** Costa, 1883: 104 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva bicinctella* Costa, 1883: 104. 100322 Therevidae.
- bicolor** Kröber, 1912: 251 (*Caenozona*). PA 48 Available, invalid: obsolete combination/rank. *Thereva bicolor* (Kröber, 1912: 251). 100074 Therevidae.
- bifasciata** Kröber, 1913: 255 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva spinulosa* Loew, 1847: 20. 100322 Therevidae.
- bilineata** Fabricius, 1775: 757 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank. *Megathereva bilineata* (Fabricius, 1775: 757). 100115 Therevidae.
- bilineata** Brunetti, 1917: 78 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva bilineata* Brunetti, 1917: 78. 100462 Therevidae.
- bimaculata** Cole, 1923: 98 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Acrosathe bimaculata* (Cole, 1923: 98). 100130 Therevidae.
- binotata** Loew, 1847 24 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva binotata* Loew, 1847: 24. 100446 Therevidae.
- bipunctata** Meigen, 1820: 121 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103). 100322 Therevidae. [The second edition of Meigen's 1820 work presents a subsequent usage: *Thereva bipunctata* Meigen, 1851: 92. Kertész (1909: 151) gave *Thereva bipunctata* (Meigen, 1820:121) as the valid name for *Thereva unica* (Harris: 1779: 103). Kröber (1913d: 54, 1925: 33, 1937: 278–279) and Lyneborg & Spitzer (1974: 20) treated *Thereva bipunctata* (Meigen, 1820:121) as a valid name].
- bipunctata canescens** Zetterstedt, 1859: 4971 (*Thereva*) PA 21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103). 100446 Therevidae. [Zetterstedt proposed *Thereva canescens* as a variety of *Thereva bipunctata* Meigen, 1820: 121. This renders *canescens* Zetterstedt, 1844: 4971, available, with its original taxonomic rank as "subspecies" according to Article 45.6 of the Code (ICZN 1999). Authors, including Bezzi (1903: 208), Kertész (1909: 151), and Kröber (1913d: 54, 1925: 33, 1937: 279), considered "*Thereva bipunctata* var. *canescens*" of Zetterstedt a junior synonym of *Thereva bipunctata* Meigen, 1820: 121. In the *Catalog of Palaearctic Diptera*, Lyneborg (1989: 34) treated "*Thereva canescens*" Zetterstedt at the rank of species and listed it as a junior synonym of *Thereva unica* (Harris, 1779: 103)].
- biroi** Kröber, 1913: 21 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva biroi* Kröber, 1913: 21. 100322 Therevidae.
- bi-signata** Costa, 1835: 5 (*Thereva*). PA 56 Unavailable: incorrect original spelling [*Thereva bisignata* Costa, 1835: 5]. *Thereva bisignata* Costa, 1835: 5. NEW Therevidae.
- bisignata** Costa, 1835: 5 (*Thereva*). PA 13 Available, valid: corrected spelling. *Thereva bisignata* Costa, 1835: 5. 100446 Therevidae. [In the *Catalog of Palaearctic Diptera* (Lyneborg 1989), *Thereva bisignata* Costa, 1835: 5, does not appear. The last major compilation of therevid names to include *Thereva bisignata* Costa is the catalog of Palaearctic Therevidae by Kröber (1937: 279)].
- bivittata** Loew, 1840: 530 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva apicalis* Wiedemann, 1821: 111. 100696 Therevidae.
- bolbocera** Osten Sacken, 1887: 162 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Megalinga bolbocera* (Osten Sacken, 1887: 162). 100130 Therevidae.
- bolboceras** Aldrich, 1905: 248 (*Thereva*). NE 60 Unavailable: misspelling [*Thereva bolbocera* Osten Sacken, 1887: 162]. *Megalinga bolbocera* (Osten Sacken, 1887: 162). NEW Therevidae. [Kröber (1912g: 252) gave the citation "Aldr., Catal. North Amer. Dipt., 248. [bolboceras] (1905)" under the entry for "*T. bolbocera* Ost.-Sack."]
- bolboceras** Kröber, 1914: 64 (*Thereva*). NE 80 Unavailable: subsequent usage [*Thereva bolboceras* Aldrich, 1905: 248]. *Megalinga bolbocera* (Osten Sacken, 1887: 162). NEW Therevidae. [Kröber used "[*Thereva*] bolboceras" in the key to species of *Thereva* females (1914: 62) and in the text (1914: 64) of the same work. Irwin & Lyneborg (1981a: 236) treated "*Thereva bolboceras*" as an "error in spelling" of *Thereva bolbocera* Osten Sacken, 1887: 162].
- borealis** Cole, 1923: 126 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Dichoglena borealis* (Cole, 1923: 126). 100130 Therevidae.
- bosniaskii** Handlirsch, 1907: 1010 (*Thereua*). PA FOSSIL 55 Unavailable: *nomen nudum*. 100246 Therevidae.
- brachycera** Loew, 1858: 336 (*Thereua*). AF 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva brachycera* Loew, 1858: 336. [48 Available, invalid: obsolete combination/rank. *Stenosathe brachycera* (Loew, 1858: 336)]. *Stenosathe brachycera* (Loew, 1858: 342) 100322 Therevidae. [Lyneborg (1980: 320) listed "*brachycera* Loew, 1858c: 342 [1860c: 126] (*Thereua*)" as a species under *Stenosathe* Lyneborg. Following the pagination given by Kröber 1913d: 53, and after an examination of the 1860 Berlin publication of Loew's 1859 work on South African Diptera, the date and pagination of two subsequent usages of *Thereva anthracina* Loew are given herein as 1860: 126 ["Halle"], and 1860: 54 ["Berlin"]. The "Halle" publication (Abh. naturw. Ver. Sachsen u. Thüringen in Halle, 1860) has not been examined].

- brevicornis** Loew, 1847: 41 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva brevicornis* Loew, 1847: 41. 100446 Therevidae.
- brevipennis** Loew, 1840: 530 (*Thereva*). PA 55 Unavailable: *nomen nudum*. *Thereva marginula* Meigen, 1820: 120. NEW Therevidae. [Loew (1840: 530) stated that *Thereva brevipennis* would be a better name for *Thereva marginula* Meigen ("Der Name *marginula* bezeichnet diese Art so wenig, daß es vielleicht besser wäre, einen andern, etwa *brevipennis*, oder einen dem ähnlichen zu wählen"), but Loew did not use a replacement name for *Thereva marginula* Meigen in his later works].
- brunettii** Hollis, 1964: 86 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva brunettii* Hollis, 1964: 86. 100462 Therevidae.
- brunnea** Cole, 1923: 108 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva brunnea* Cole, 1923: 108. 100130 Therevidae.
- brunninervis** Kröber, 1913: 29 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva brunninervis* Kröber, 1913: 29. 100322 Therevidae.
- caerulescens** Panzer 1804: 126 (*Thereva*). Patria ignota 12 Available, valid: not recognized (*nomen dubium*). *Thereva caerulescens* Panzer, 1804: 126. NEW Therevidae. [*Thereva caerulescens* Panzer, 1804: 126, is probably a name for a tachinid taxon, as suggested from Panzer's use of the genus *Thereva* for describing phasiine tachinids].
- caesia** Meigen, 1835: 67 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Pandivirilia caesia* (Meigen, 1835: 67). 100446 Therevidae.
- californica** Kröber, 1912: 259 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia californica* (Kröber, 1912: 259). 100130 Therevidae.
- callosa** Kröber, 1912: 685 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva callosa* Kröber, 1912: 685. 100322 Therevidae.
- candidata** Loew, 1869: 8 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva candidata* Loew, 1869: 8. [48 Available, invalid: obsolete combination/rank. *Spiriverpa candidata* (Loew, 1869: 8)]]]. *Spiriverpa candidata* (Loew, 1869: 8). 100130 Therevidae.
- canescens** Kröber, 1912: 406 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva canescens* Kröber, 1912: 406. 100322 Therevidae. [Kröber originally proposed *Thereva canescens* Kröber, 1912: 406, as a variety of *Thereva didyma* Loew, 1843: 23].
- capensis** Lyneborg, 1976: 332 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva capensis* Lyneborg, 1976: 332. 100463 Therevidae.
- carbonum** Meyer, 1851: 677 (*Thereva*). PA FOSSIL 55 Unavailable: *nomen nudum*. NEW Therevidae. [*Thereva carbonum* Meyer is in a brief communication by Meyer, attributed to Heyden. Heyden (1856: 200) subsequently described the species, validating the name].
- carbonum** Heyden, 1856: 200 (*Thereva*). FOSSIL 10 Available, valid: [no change]. *Thereva carbonum* Heyden, 1856: 200. NEW Therevidae.
- caucasica** Kröber, 1913: 257 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva caucasica* Kröber, 1913: 257. 100322 Therevidae.
- chilensis** Macquart, 1840: 25 (*Thereva*). NT 10 Available, valid: [no change]. *Thereva chilensis* Macquart, 1840: 25. NEW Therevidae. [Malloch (1932: 243) and Ortiz (1946: 86) listed "? *Thereva chilensis*, Macquart" as a synonym of *Thereva albiventris* Philippi, 1865: 770, although a formal synonymy of these two names has not been established. Ortiz (1946: 86) treated *Thereva albiventris* Philippi, 1865: 770, as a valid name and did not recognize *Thereva chilensis* Macquart, 1840: 25, as a valid name in the Chilean therevid fauna. The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva chilensis* Macquart, 1841: 303].
- chillaloensis** Lyneborg, 1976: 327 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva chillaloensis* Lyneborg, 1976: 327. 100463 Therevidae.
- chrysargyra** Ségué, 1953: 84 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva chrysargyra* Ségué, 1953: 84. 100110 Therevidae.
- cincta** Meigen, 1820: 117 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva cincta* Meigen, 1820: 117. 100322 Therevidae. [The second edition of Meigen's 1820 work presents a subsequent usage of this name: *Thereva cincta* Meigen, 1851: 89].
- cinerascens** Cole, 1923: 97 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Spiriverpa cinerascens* (Cole, 1923: 97). 100130 Therevidae.
- cinerea** Fabricius, 1805: 221 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. [*Phasia cinerea* Fabricius, 1805: 221. [21 Available, invalid: junior subjective synonym. *Phasia obesa* (Fabricius, 1798: 561)]. *Phasia obesa* (Fabricius, 1798: 561). 100673 Tachinidae. [Bezzi & Stein (1907: 580), in Band III of the catalog of the Palaearctic Diptera, listed "*cinerea* Fabr., Syst. Antl., 221. 31. [*Thereva*] (1805)" as a synonym under *Allophora* (*Hyalomyia*) *obesa* Fabricius, 1798: 561].

- cingulata* Kröber, 1912: 267 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva cingulata* Kröber, 1912: 267. 100130 Therevidae.
- cinifera* Meigen, 1830: 322 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva cinifera* Meigen, 1830: 322. 100322 Therevidae.
- circumscripta* Kröber, 1913: 55 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva circumscripta* Loew, 1847: 19]. *Thereva circumscripta* Loew, 1847: 19. NEW Therevidae.
- circumscripta* Loew, 1847: 19 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva circumscripta* Loew, 1847: 19. 100696 Therevidae.
- citrina* Becker, 1902: 35 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Neotherevella citrina* (Becker, 1902: 35). 100460 Therevidae.
- claripennis* Loew, 1847: 23 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination.
- Thereva claripennis* Loew, 1847: 23. 100446 Therevidae.
- cockerelli* Cole, 1923: 99 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Spiriverpa cockerelli* (Cole, 1923: 99). 100130 Therevidae.
- coleoptrata* Latreille, 1805: 379 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva subcoleoptrata* Fabricius, 1798: 560. [80 Unavailable: subsequent usage. *Syrphus subcoleoptratus* Fabricius, 1775: 284. [70 Unavailable: misidentification. *Conops subcoleoptratus* Linnaeus, 1767: 1006. [48 Available, invalid: obsolete combination/rank. *Phasia subcoleoptrata* (Linnaeus, 1767: 1006)]]]]. *Phasia hemiptera* (Fabricius, 1794: 284). NEW Tachinidae.
- comata* Loew, 1869: 7 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva comata* Loew, 1869: 7. 100450 Therevidae.
- concaivrons* Kröber, 1914: 70 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva concaivrons* Kröber, 1914: 70. 100130 Therevidae.
- concolor* Walker, 1848: 226 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus concolor* (Walker, 1848: 226). 100076 Therevidae.
- confinis* Fallén, 1814: 12 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank [*Clorismia confinis* (Fallén, 1814: 12) [48 21 Available, invalid: junior subjective synonym. *Clorismia rustica* (Panzer, 1804: 21)]]]. *Clorismia rustica* (Panzer, 1804: 21). 100105 Therevidae.
- conformis* Walker, 1848: 225 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus conformis* (Walker, 1848: 225). 100076 Therevidae.
- confusa* Kröber, 1913: 24 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva confusa* Kröber, 1913: 24. 100322 Therevidae.
- congoensis* Lyneborg, 1976: 313 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva congoensis* Lyneborg, 1976: 313. 100463 Therevidae.
- congrua* Walker, 1858: 90. (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Irwinella congrua* (Walker, 1858: 90) 100462 Therevidae.
- conica* Kröber, 1913: 258 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva conica* Kröber, 1913: 258. 100322 Therevidae.
- conscita* Walker, 1861: 8 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank [*Irwinella conscita* (Walker, 1861: 8). [21 Available, invalid: junior subjective synonym. ]. *Irwinella congrua* (Walker, 1858: 90)]]]. *Irwinella la congrua* (Walker, 1858: 90). 100462 Therevidae.
- conspicua* Walker, 1848: 223 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Psilocephala conspicua* (Walker, 1848: 223). 100038 Therevidae.
- corpulenta* Kröber, 1929: 422 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva corpulenta* Kröber, 1929: 422. 100322 Therevidae.
- corinneae* Gosseries, 1991: 84 (*Thereva*). PA 27 Available, invalid: unjustified new name [*Thereva aurata* Loew, 1854: 1. [10 Available, valid: [no change]. *Thereva aurata* Loew, 1854: 1. NEW Therevidae. [Gosseries (1991: 84) proposed "*Thereva corrineae*" as a new name for *Thereva aurata* Loew, 1854: 1, with the note "(preocc. Harris, 1935)." The name, *Thereva aurata* Harris, 1835: 596, is a nomen nudum, and a replacement name for *Thereva aurata* Loew, 1854: 1, is unjustified].
- corrusca* Le Conte, 1859: 57 (*Thereva*). NE 60 Unavailable: misspelling [*Thereva corusca* Wiedemann, 1828: 232. [27 Available, invalid: unjustified new name. *Thereva tergisa* Say, 1823: 39. [48 Available, invalid: obsolete combination/rank. *Litolinga tergisa* (Say, 1823: 39)]]]]. *Litolinga tergisa* (Say, 1823: 39). NEW Therevidae. [Le Conte (1859: 813) uses the spelling "*corrusca*" in the taxonomic index of this work].
- corusca* Wiedemann, 1828: 232 (*Thereva*). NE 27 Available, invalid: unjustified new name [*Thereva tergisa* Say, 1823: 39. [48 Available, invalid: obsolete combination/rank. *Litolinga tergisa* (Say, 1823: 39)]]]. *Litolinga tergisa* (Say,

- 1823: 39). NEW Therevidae. [Irwin & Lyneborg (1981a: 236) treated *Thereva corusca* Wiedemann, 1828: 232, as a junior synonym of *Thereva tergisa* Say, 1823: 39, under the genus *Litolina*].
- crassicornis** Bellardi, 1861: 88 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia crassicornis* (Bellardi, 1861: 88). 100130 Therevidae.
- crassicornis** Williston, 1886: 293 (*Thereva*). NE 34 Available, invalid: junior homonym, primary [*Thereva crassicornis* Bellardi, 1861: 88. [48 Available, invalid: obsolete combination/rank. *Ozodiceromyia crassicornis* (Bellardi, 1861: 88)]]]. *Pallicephala pachyceras* (Williston, 1908: 206) [Senior objective synonym of *Thereva crassicornis* Williston, 1886: 293]. 100177 Therevidae.
- crassipennis** Fabricius, 1794: 284 (*Syrphus*). PA 48 Available, invalid: obsolete combination/rank. *Ectophasia crassipennis* (Fabricius, 1794: 284). 100296 Tachinidae.
- curta** Kröber, 1913: 22 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva curta* Kröber, 1913: 22. 100322 Therevidae.
- curticornis** Kröber, 1912: 401 (*Thereva*) AF 10 Available, valid: [no change]. *Thereva curticornis* Kröber, 1912: 401. 100098 Therevidae.
- cylindrica** Walker, 1848: 224 (*Thereva*). OR 48 Available, invalid: obsolete combination/rank. *Psilocephala cylindrica* (Walker, 1848: 224). 100462 Therevidae.
- decipiens** Kröber, 1913: 30 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva decipiens* Kröber, 1913: 30. 100322 Therevidae. [Kröber (1924: 28) included *Thereva decipiens* Kröber, 1913: 30, in the subgenus *Athereva*. He later fixed *Thereva decipiens* Kröber as the type species of *Athereva* (1937: 277), which was later treated as a junior synonym of *Thereva* Latreille by Lyneborg (1989: 25)].
- dejecta** Walker, 1852: 162 (*Thereva*). Patria ignota 12 Available, valid: not recognized (*nomen dubium*). *Thereva dejecta* Walker, 1852: 162. NEW Therevidae.
- didyma** Loew, 1847: 18 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva didyma* Loew, 1847: 18. [21 Available, invalid: junior subjective synonym. *Thereva spinulosa* Loew, 1847: 20]]. *Thereva spinulosa* Loew, 1847: 20. 100446 Therevidae.
- dimidiata** Macquart, 1847: 50 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus dimidiatus* (Macquart, 1847: 50). 100076 Therevidae.
- discreta** Becker, 1922: 32 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva discreta* Becker, 1922: 32. 100322 Therevidae.
- dispar** Wiedemann, 1820: 124 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Euphycus dispar* (Wiedemann, 1820: 124). 100136 Therevidae. [A more accurate short citation for this name would read as follows: *Thereva dispar* Wiedemann in Meigen, 1820: 124. The second edition of Meigen's 1820 work presents a subsequent usage: *Thereva dispar* Wiedemann in Meigen, 1851: 94. Bezzi (1903: 214), Kröber (most works), and Lyneborg (1989: 20) erroneously attributed this name to Meigen].
- dispar** Loew, 1840: 528 (*Thereva*). PA 27 Available, invalid: unjustified new name [*Thereva taeniata* Meigen, 1820: 120. [21 Available, invalid: junior subjective synonym. *Thereva cincta* Meigen, 1820: 117]]. *Thereva cincta* Meigen, 1820: 117. NEW Therevidae. [Loew (1840: 528) proposed *Thereva dispar* Loew, 1840: 528, as a replacement name using the following statements: "Ich habe von *Thereva lugubris* Meig. so oft nur das Männchen und von *Thereva taeniata* Meig. nur das Weibchen gefangen, das ich beide unbedenklich als die Geschlechter einer Spezies vereinigen muß. Zwar ist bei der auch in der Dunkelheit der Behaarung, wie in der Farbe der Einschnitte recht merklich veränderlichen *lugubris* das Flügelmal dunkler als bei *taeniata*, und die Flügel überhaupt nicht selten mehr gebräunt, doch zeigt schon die große Veränderlichkeit dieser Färbungen, wie wenig sie etwas gegen obige Ansicht entscheiden können. Beide Namen, *lugubris* wie *vittata*, werden durch die Vereinigung beider Geschlechter unpassend. Ich schlage dafür *Thereva dispar* vor." Loew's use of the name "*vittata*" in the last sentence is likely an error in the manuscript for "*lugubris*," and *Thereva vittata* Loew, 1840: 528, is a *nomen nudum*. The identity of *Thereva lugubris* Meig., *sensu* Loew, is ambiguous (either the misidentification *Bibio lugubris* Meigen, 1804 or *Bibio lugubris* Fabricius, 1787: 328 = *Thereva lugubris* Meigen 1820, subsequent use of *Bibio lugubris* Fabricius, 1787: 328) because Loew does not indicate either the 1804 or 1820 works by Meigen. The identity of "*Thereva taeniata* Meig." can be attributed to Meigen's 1820 work; and the name *Thereva dispar* Loew, 1840: 528, is considered, therefore, an unjustified new name for *Thereva taeniata* Meigen. *Thereva taeniata* Meigen is a subjective synonym of *Thereva cincta* Meigen].
- diversa** Coquillett, 1894: 100 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva diversa* Coquillett, 1894: 100. 100130 Therevidae.
- diversipes** Kröber, 1911: 493 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank. *Cyclotelus diversipes* (Kröber, 1911: 493). 100319 Therevidae.
- dubia** Fabricius, 1805: 221 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. [*Myiolepta dubia* (Fabri-

- cus, 1805: 221). [21 Available, invalid: junior subjective synonym. *Myolepta luteola* (Gmelin, 1790: 2879)]. *Myolepta luteola* (Gmelin, 1790: 2879). 100672 Syrphidae.
- duplicis** Coquillett, 1893: 199 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva duplicis* Coquillett, 1893: 199. 100130 Therevidae.
- eggeri** Lyneborg & Spitzer, 1974: 34 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva eggeri* Lyneborg & Spitzer, 1974: 34. 100075 Therevidae.
- egressa** Coquillett, 1894: 99 (*Thereva*). NE 13 Available, valid: corrected spelling. *Thereva egressa* Coquillett, 1894: 99. 100130 Therevidae.
- egressus** Coquillett, 1894: 99 (*Thereva*). PA 56 Unavailable: incorrect original spelling [*Thereva egressa* Coquillett, 1894: 99]. *Thereva egressa* Coquillett, 1894: 99. NEW Therevidae.
- eximia** Meigen, 1820: 124 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Pandivirilia eximia* (Meigen, 1820: 124). 100446 Therevidae. [The second edition of Meigen's 1820 work presents a subsequent usage: *Thereva eximia* Meigen, 1851: 95].
- fasciata** Meigen, 1804: 214 (*Bibio*). PA 80 Unavailable: subsequent usage [*Nemotelus fasciatus* De Geer, 1776: 186]. *Thereva plebeja* (Linnaeus, 1758: 589). 100104 Therevidae.
- fasciatus** De Geer, 1776: 186 (*Nemotelus*). PA 48 Available, invalid: obsolete combination/rank [*Thereva fasciata* (De Geer, 1776: 186). [21 Available, invalid: junior subjective synonym. *Thereva plebeja* (Linnaeus, 1758: 589)]]. *Thereva plebeja* (Linnaeus, 1758: 589). 100184 Therevidae.
- fascipennis** Macquart, 1846: 232 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank. *Psilocephala fascipennis* (Macquart, 1846: 232). 100137 Therevidae. [The separate of this article (Macquart 1846b) presents a subsequent usage of this name: *Thereva fascipennis* Macquart, 1846: 104].
- femoralis** Kröber, 1914: 71 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva femoralis* Kröber, 1914: 71. 100322 Therevidae.
- fenestrata** Kröber, 1913: 154 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva fenestrata* Kröber, 1913: 154. 100322 Therevidae.
- flavescens** Loew, 1847: 3 (*Thereva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva flavescens* Loew, 1847: 3. 100446 Therevidae.
- flavicauda** Coquillett in Baker, 1904: 23 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva flavicauda* Coquillett in Baker, 1904: 23. 100130 Therevidae.
- flavicincta** Loew, 1869: 168 (*Thereva*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva flavicincta* Loew, 1869: 168. 100450 Therevidae.
- flavicornis** Eversmann, 1834: 423 (*Thereva*). PA 55 Unavailable: *nomen nudum*. 100446 Therevidae.
- flavicornis** Kröber, 1912: 680 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva flavicornis* Kröber, 1912: 680. 1000246 Therevidae.
- flavilabris** Meigen, 1820: 122 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva fulva* (Meigen, 1804: 215). 100068 Therevidae. [Meigen (1820: 122) proposed *Thereva flavilabris* Meigen as "Th. flavilabris. Meg." The second edition of Meigen's work presents a subsequent usage: *Thereva flavilabris* Meigen 1851: 93].
- flavipennis** Kröber, 1913: 30 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva flavipennis* Kröber, 1913: 30. 100322 Therevidae.
- flavipes** Fabricius, 1794: 254 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank. [*Dialineura flavipes* (Fabricius, 1794: 254). [21 Available, invalid: junior subjective synonym. *Dialineura anilis* (Linnaeus, 1760: 442)]]. *Dialineura anilis* (Linnaeus, 1760: 442). 100105 Therevidae.
- flavipes** Fallén, 1814: 15 (*Leptis*). PA 80 Unavailable: subsequent usage [*Nemotelus flavipes* De Geer, 1776: 185. 48 Available, invalid: obsolete combination/rank. *Thereva flavipes* (De Geer, 1776: 185)]]. *Thereva flavipes* (De Geer, 1776: 185). 100136 Therevidae.
- flavipes** De Geer, 1776: 185 (*Nemotelus*). PA 48 Available, invalid: obsolete combination/rank. *Thereva flavipes* (De Geer, 1776: 185). 100136 Therevidae.
- flavipilosa** Cole, 1923: 125 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva flavipilosa* Cole, 1923: 125. 100130 Therevidae.
- flaviventris** Kröber, 1912: 693 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva flaviventris* Kröber, 1912: 693. 100322 Therevidae.
- flavohirta** Kröber, 1914: 70 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva flavohirta* Kröber, 1914: 70. 100130 Therevidae.
- flavolineata** Brunetti, 1912: 480 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva flavolineata* Brunetti, 1912: 480. 100462 Therevidae.
- flavopilosa** Kröber, 1914: 72 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva flavopilosa* Kröber, 1914: 72. 100322 Therevidae.

- foxi* Cole, 1923: 112 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva foxi* Cole, 1923: 112. 100130 Therevidae.
- frauenfeldi* Loew, 1856: 32 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva frauenfeldi* Loew, 1856: 32. [48 Available, invalid: obsolete combination/rank. *Hoplosathe frauenfeldi* (Loew, 1856: 32)]]]. *Hoplosathe frauenfeldi* (Loew, 1856: 32). 100322 Therevidae.
- freidbergi* Lyneborg, 1976: 239 (*Thereva*). PA 27 Available, invalid: unjustified new name [*Thereva arcuata* (Kröber, 1912: 252)]. [21 Available, invalid: junior subjective synonym. *Thereva cincta* Meigen, 1820: 117]]. *Thereva semirufa* Kröber, 1912: 687 [Senior subjective synonym of *Thereva arcuata* Kröber, 1912: 252]. 100322 Therevidae.
- frontalis* Say, 1824: 370 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva frontalis* Say, 1824: 370. 100130 Therevidae.
- frontalis* Schummel, 1839: 58 (*Thereva*). PA 34 Available, invalid: junior homonym, primary [*Thereva frontalis* Say, 1824: 370]. *Thereva valida* Loew, 1847: 39 [Senior subjective synonym of *Thereva frontalis* Schummel, 1839: 58]. 100322 Therevidae. [Bezzi (1903: 208) and Kertész (1909: 152) listed “*?frontalis* Schumm.” as a junior synonym of *Thereva circumscripta* Loew, 1847: 19].
- frontata* Kröber, 1912: 140 (*Neothereva*). PA 48 Available, invalid: obsolete combination/rank. [*Thereva frontata* (Kröber, 1912: 140). [21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103)]]]. *Thereva unica* (Harris, 1779: 103). 100074 Therevidae.
- frontata* Becker, 1908: 23 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Irwiniella frontata* (Becker, 1908: 23). 100690 Therevidae.
- frontosa* Kröber, 1912: 703 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva frontosa* Kröber, 1912: 703. 100322 Therevidae.
- fucata* Loew, 1872: 74 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva fucata* Loew, 1872: 74. 100450 Therevidae.
- fucatoides* Bromley, 1937: 99 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva fucatoides* Bromley, 1937: 99. 100130 Therevidae.
- fulva* Meigen, 1804: 215 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank. *Thereva fulva* (Meigen, 1804: 215). 100105 Therevidae.
- fulvibarba* Kröber, 1912: 694 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva fulvibarba* Kröber, 1912: 694. 100322 Therevidae.
- fulvicornis* Kröber, 1924: 105 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva fulvicornis* Kröber, 1924: 105. 100322 Therevidae.
- fulvipennis* Kröber, 1912: 694 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva fulvipennis* Kröber, 1912: 694. 100322 Therevidae.
- funebis* Meigen, 1820: 121 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva funebis* Meigen, 1820: 121. 100322 Therevidae. [*Thereva funebis* Meigen, 1820: 121, is not a new name for *Bibio lugubris* Meigen, 1804: 214, but is the first available name for a taxon that was initially misidentified as *Bibio lugubris* Fabricius, 1797: 328. The second edition of Meigen’s 1820 work presents a subsequent usage: *Thereva funebis* Meigen, 1851: 92].
- funebis* Walker, 1865: 111 (*Thereva*). AU 12 Available, valid: not recognized (*nomen dubium*). *Thereva funebis* Walker, 1865: 111. 100076 Therevidae. [Unplaced species of Therevidae (Irwin & Lyneborg 1989: 358)].
- fuscinervis* Zetterstedt, 1838: 524 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva fuscinervis* Zetterstedt, 1838: 524. 100322 Therevidae.
- fuscipennis* Meigen, 1820: 127 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Pandivirilia fuscipennis* (Meigen, 1820: 127). 100633 Therevidae. [Meigen proposed *Thereva fuscipennis* as “Th. fuscipennis. Meg.” The second edition of Meigen’s 1820 work presents a subsequent usage: *Thereva fuscipennis* Meigen, 1851: 97].
- fuscipennis* Cooke, 1878: 19 (*Thereva*). PA 70 Unavailable: misidentification [*Thereva fuscipennis* Meigen, 1820: 127. [48 Available, invalid: obsolete combination/rank. *Pandivirilia fuscipennis* (Meigen, 1820: 127)]]]. *Clorismia ardea* (Fabricius, 1794: 272). 100136 Therevidae. [This name was referenced in Bezzi (1903: 212) as “*fuscipennis* Cooke teste Verrall” and in Kertész (1909: 161) as “*fuscipennis* Cooke (nec. Meig.), *Entomol. Monthly Mag.*, XV.19. [*Thereva*] (1878)” as a synonym of “*Psilocephala ardea* Fabr.”].
- germana* Walker, 1848: 222 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia germana* (Walker, 1848: 222). 100130 Therevidae.
- gilvipes* Loew, 1869: 168 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva gilvipes* Loew, 1869: 168. [21 Available, invalid: junior subjective synonym. *Thereva flavicincta* Loew, 1869: 168]]]. *Thereva flavicincta* Loew, 1869: 168. 100077 Therevidae.
- glabra* Kröber, 1928: 131 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva glabra* Kröber, 1928: 131. 100322 Therevidae.

- glauca** Kröber, 1913: 158 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva glauca* Kröber, 1913: 158. 100322 Therevidae.
- glaucescens** Kröber, 1912: 408 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva glaucescens* Kröber, 1912: 408. 100322 Therevidae.
- globulicornis** Lyneborg, 1976: 319 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva globulicornis* Lyneborg, 1976: 319. 100463 Therevidae.
- gomeræ** Báez, 1982: 85 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva gomeræ* Báez, 1982: 85. 100322 Therevidae.
- graeca** Kröber, 1912: 701 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva graeca* Kröber, 1912: 701. 100322 Therevidae.
- grancanariensis** Báez, 1982: 87 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva grancanariensis* Báez, 1982: 87. 100322 Therevidae.
- grisea** Eversmann, 1834: 423 (*Thereva*). PA 55 Unavailable: *nomen nudum*. 100446 Therevidae.
- grisea** Kröber, 1913: 161 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva grisea* Kröber, 1913: 161. 100322 Therevidae.
- griscens** Becker, 1922: 31 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva griscens* Becker, 1922: 31. 100322 Therevidae.
- gruenbergi** Kröber, 1912: 499 (*Thereva*). PA 13 Available, valid: corrected spelling. *Thereva gruenbergi* Kröber, 1912: 499. 100322 Therevidae.
- grünbergi** Kröber, 1912: 499 (*Thereva*). PA 56 Unavailable: incorrect original spelling [*Thereva gruenbergi* Kröber, 1912: 499]. *Thereva gruenbergi* Kröber, 1912: 499. 100322 Therevidae.
- haemorrhoidalis** Osten Sacken, 1858: 38 (*Thereva*) NE 60 Unavailable: misspelling [*Thereva hoemorrhoidalis* Macquart, 1840: 26. [48 Available, invalid: obsolete combination/rank. *Ozodiceromyia hoemorrhoidalis* (Macquart, 1840: 25)]]]. *Ozodiceromyia hoemorrhoidalis* (Macquart, 1840: 25). NEW Therevidae. [Irwin & Lyneborg (1981: 257) treated the species-group name "*haemorrhoidalis*" as an unjustified emendation of "*hoemorrhoidalis*" under *Ozodiceromyia*].
- handlirschi** Kröber, 1912: 696 (*Thereva*) PA 10 Available, valid: [no change]. *Thereva handlirschi* Kröber, 1912: 696. 100322 Therevidae.
- hebes** Loew, 1869: 123 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva hebes* Loew, 1869: 123. [34 Available, invalid: junior homonym, primary [*Thereva hebes* Walker, 1852: 160. [48 Available, invalid: obsolete combination/rank [*Anabarhynchus hebes* (Walker, 1852: 160). [21 Available, invalid: junior subjective synonym. *Anabarhynchus latifrons* Macquart, 1850: 348]]]. *Ammothereva poecilopa* (Loew, 1871: 320) [Senior objective synonym of *Thereva hebes* Loew, 1869: 123]. 100322 Therevidae.
- hebes** Walker, 1852: 160 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank [*Anabarhynchus hebes* (Walker, 1852: 160). [21 Available, invalid: junior subjective synonym. *Anabarhynchus latifrons* Macquart, 1850: 348]]]. *Anabarhynchus latifrons* Macquart, 1850: 348. 100076 Therevidae.
- helvetica** Kröber, 1937: 281 (*Thereva*). PA 27 Available, invalid: unjustified new name [*Thereva albohirta* Kröber, 1912: 685]. *Thereva albohirta* Kröber, 1912: 685. 100322 Therevidae.
- hemipterus** Fabricius, 1794: 284 (*Syrphus*). PA 48 Available, invalid: obsolete combination/rank. *Phasia hemiptera* (Fabricius, 1794: 284). 100296 Tachinidae.
- hermanni** Kröber, 1912: 683 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva hermanni* Kröber, 1912: 683. 100322 Therevidae.
- hermaphrodita** Becker, 1922: 33 (*Neothereva*). PA 48 Available, invalid: obsolete combination/rank [*Thereva hermaphrodita* (Becker, 1922: 33). [21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103)]]]. *Thereva unica* (Harris, 1779: 103). 100098 Therevidae.
- hilarimorpha** Kröber, 1912: 673 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva hilarimorpha* Kröber, 1912: 673. 100322 Therevidae.
- hinu** Hollis, 1964: 84 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva hinu* Hollis, 1964: 84. 100462 Therevidae.
- hirta** Kröber, 1913: 157 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva hirta* Kröber, 1913: 157. 100322 Therevidae.
- hirticeps** Loew, 1874: 382 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva hirticeps* Loew, 1874: 382. 100450 Therevidae.
- hirtipes** Fabricius, 1805: 219 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank [*Trichopoda hirtipes* (Fabricius, 1805: 219). [21 Available, invalid: junior subjective synonym. *Trichopoda pennipes* (Fabricius, 1781: 450)]]]. *Trichopoda pennipes* (Fabricius, 1781: 450). 100710 Tachinidae.
- hirtus** De Geer, 1776: 187 (*Nemotelus*). PA 48 Available, invalid: obsolete combination/rank [*Thereva hirta* (De Geer,

- 1776: 187). [21 Available, invalid: junior subjective synonym. *Thereva nobilitata* (Fabricius, 1775: 757)]. *Thereva nobilitata* (Fabricius, 1775: 757). 100104 Therevidae.
- hispanica* Strobl in Czerny & Strobl, 1909: 170 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva hispanica* Strobl, 1909: 170. 100322 Therevidae. [Strobl proposed *Thereva apicalis hispanica* Strobl in Czerny & Strobl, 1909: 170, as a subspecies of *Thereva apicalis* Wiedemann: "*apicalis* Weid. subsp. *hispanica*" (Strobl in Czerny & Strobl 1909: 170). Kröber (1912: 701), in his revision of Afrotropical and Palaearctic Therevidae, raised the name "*hispanica* Strobl, 1909: 170," from subspecies to species rank in *Thereva* without acknowledging the change.
- hoemorrhoidalis* Macquart, 1840: 26 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia hoemorrhoidalis* (Macquart, 1840: 25). 100087 Therevidae. [Macquart proposed this name as "*Thereva hoemorrhoidalis*, *Bosc.*" The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva hoemorrhoidalis* Macquart, 1841: 304].
- holoserica* Fabricius, 1805: 218 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Xysta holoserica* (Fabricius, 1805: 218). 100673 Tachinidae.
- hyalina* Kröber, 1913: 159 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva hyalina* Kröber, 1913: 159. 100322 Therevidae.
- hyalipennis* Fallén, 1815: 233 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Litophasia hyalipennis* (Fallén, 1815: 233). 100673 Tachinidae. [The publication *Diptera Sveciae* presents a subsequent usage: *Thereva hyalipennis* Fallén, 1820: 4].
- hyalipennis* Macquart, 1846: 232 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus hyalipennis* (Macquart, 1846: 232). 100076 Therevidae. [The separate of this article (Macquart 1846b) presents a subsequent usage of this name: *Thereva hyalipennis* Macquart, 1846: 104].
- imberbis* Fallén, 1814: 5 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank. *Psilocephala imberbis* (Fallén, 1814: 5). 100105 Therevidae.
- inconspicua* Walker, 1852: 160 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus inconspicuus* (Walker, 1852: 160). 100076 Therevidae.
- inconstans* Wiedemann, 1828: 558 (*Thereva*). AF 48 Available, invalid: obsolete combination/rank. *Stichopogon inconstans* (Wiedemann, 1828: 588). 100322 Asilidae.
- indica* Walker, 1852: 159 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva indica* Walker, 1852: 159. 100462 Therevidae.
- innotata* Kröber, 1912: 678 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva innotata* Kröber, 1912: 678. 100322 Therevidae.
- innotata* Walker, 1856: 455 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus innotatus* (Walker, 1856: 455). 100576 Therevidae.
- inornata* Verrall, 1909: 556 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva inornata* Verrall, 1909: 556. 100322 Therevidae. [Verrall (1909: 556) proposed *Thereva inornata* as a variety of *Thereva arcuata* Loew, 1847: 9, making the original rank for this name "subspecies" according to Article 45.5 of the Code (ICZN 1999). Lyneborg (1989: 29) raised *Thereva inornata* Verrall to species rank].
- insularis* Becker, 1922: 27 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva insularis* Becker, 1922: 27. 100322 Therevidae.
- intermedia* Kröber, 1913: 266 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva intermedia* Kröber, 1913: 266. 100322 Therevidae.
- intersectus* Geoffroy in Fourcroy, 1784: 457 (*Tabanus*). PA 48 Available, invalid: obsolete combination/rank [*Thereva intersecta* (Geoffroy, 1784: 457). [21 Available, invalid: junior subjective synonym. *Thereva plebeja* (Linnaeus, 1758: 589)]. *Thereva plebeja* (Linnaeus, 1758: 589). 100390 Therevidae. [The species was described by Geoffroy (1764: 462) as "Le taon noir à anneaux du ventre bordés de blanc." This species was later named binomially: *Tabanus intersectus* Geoffroy in Fourcroy, 1784: 457].
- invaria* Brunetti, 1920: 302 (*Thereva*). OR 60 Unavailable: misspelling [*Thereva nivaria* Walker, 1852: 159]. *Thereva nivaria* Walker, 1852: 159. 100462 Therevidae.
- ishikariana* Matsumura, 1916: 340 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva ishikariana* Matsumura, 1916: 340. 100322 Therevidae.
- ishikarina* Nagatomi & Lyneborg, 1989: 371 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva ishikariana* Matsumura, 1916: 340]. *Thereva ishikariana* Matsumura, 1916: 340. NEW Therevidae.
- isshikariana* Kröber, 1937: 281 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva ishikariana* Matsumura, 1916: 340]. *Thereva ishikariana* Matsumura, 1916: 340. NEW Therevidae.
- johnsoni* Coquillett, 1893: 200 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva johnsoni* Coquillett, 1893: 200. 100130 Therevidae.

- kempi** Brunetti, 1920: 298 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva kempi* Brunetti, 1920: 298. 100462 Therevidae.
- lacteipennis** Becker in Becker & Stein, 1913: 548 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Actorthia lacteipennis* (Becker in Becker & Stein, 1913: 548). 100322 Therevidae. [Lyneborg (1989: 12) gave the attribution and date for *T. lacteipennis* as "Becker, 1912: 548" in his chapter on Therevidae in the *Catalog of Palaearctic Diptera*].
- lanata** Kröber, 1912: 26 (*Hermannia*). PA 48 Available, invalid: obsolete combination/rank. [*Thereva lanata* (Kröber, 1912: 26). 48 Available, invalid: obsolete combination/rank. *Hermannula lanata* (Kröber, 1912: 26.)] *Hermannula lanata* (Kröber, 1912: 26). 100069 Therevidae. [Kröber (1912: 26) originally proposed *Hermannia* as a genus, then changed its rank to a subgenus of *Thereva* (Kröber, 1925: 28; 1937: 276). He proposed *Thereva* (*Hermannia*) *alaimontana* Kröber, 1925: 28, as a replacement name for *Thereva* (*Hermannia*) *lanata* Kröber, 1912: 26, which Kröber considered to be preoccupied by *Thereva lanata* Zetterstedt, 1838: 523. Strand (1932: 195) proposed *Hermannula* as a replacement name for *Hermannia* Kröber, 1912, which is preoccupied by *Hermannia* Nicolet, 1885 (Arachnida). Lyneborg (1986: 21) treated *Hermannula* Strand, 1932: 195, as a valid genus and considered *alaimontana* Kröber, 1925: 28, an unjustified name change for *lanata* Kröber, 1912: 26].
- lanata** Zetterstedt, 1838: 523 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva lanata* Zetterstedt, 1838: 523. 100322 Therevidae.
- lanipes** Fabricius, 1805: 220 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Trichopoda lanipes* (Fabricius, 1805: 220). 100085 Tachinidae.
- lapponica** Zetterstedt, 1838: 525 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Dichoglena lapponica* (Zetterstedt, 1838: 525). [Available, invalid: junior subjective synonym. *Dichoglena nigripennis* (Ruthe, 1831: 1215)]]]. *Dichoglena nigripennis* (Ruthe, 1831: 1215). 100446 Therevidae.
- lateralis** Eschscholtz, 1822: 112 (*Thereva*). OR 48 Available, invalid: obsolete combination/rank. *Psilocephala lateralis* (Eschscholtz, 1822: 112). 100691 Therevidae.
- lateralis** Walker, 1852: 161 (*Thereva*). Patria ignota 34 Available, invalid: junior homonym, primary [*Thereva lateralis* Eschscholtz, 1822: 112. [48 Available, invalid: obsolete combination/rank. *Psilocephala lateralis* (Eschscholtz, 1822: 112)]]]. *Anabarhynchus liepae* Irwin & Lyneborg, 1989: 355 [Senior subjective synonym of *Anabarhynchus lateralis* (Walker, 1852: 161)]. 100076 Therevidae.
- laticornis** Loew, 1856: 32 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva laticornis* Loew, 1856: 32 [48 Available, invalid: obsolete combination/rank. *Ammothereva laticornis* (Loew, 1856: 32)]]]. *Ammothereva laticornis* (Loew, 1856: 32). 100322 Therevidae.
- latifrons** Macquart, 1848: 191 (*Thereva*). Patria ignota 12 Available, valid: not recognized (*nomen dubium*). *Thereva latifrons* Macquart, 1848: 191. 100460 Therevidae. [The separate (1848: 1–77, published by Roret) presents a subsequent usage of this name: *Thereva latifrons* Macquart, 1848: 31. Kröber (1912: 139, 1913: 42) considered *Thereva latifrons* Macquart, 1848: 31, a name for a species within his genus *Neothereva*. Lyneborg (1978: 75, 76) did not explicitly give the current status of *Neothereva latifrons* (Macquart, 1848: 191), as he proposed *Neotherevella* (for some species of *Neothereva*) and declared *Neothereva* a junior synonym of *Thereva*].
- latistriata** Kröber, 1913: 156 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva strigata* (Fabricius, 1794: 255). 100075 Therevidae.
- laufferi** Strobl, 1909: 168 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva laufferi* Strobl, 1909: 168. 100322 Therevidae. [This name is properly cited as *Thereva laufferi* Strobl in Czerny & Strobl, 1909: 168].
- lichtwardti** Kröber, 1913: 160 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva plebeja* (Linnaeus, 1758: 589). 100322 Therevidae. [Kröber (1925: 47, 1937: 283) treated *Thereva lichtwardti* as a variety of *Thereva plebeja* (Linnaeus, 1758: 589)].
- lugens** Loew, 1847: 15 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva lugens* Loew, 1847: 15. [21 Available, invalid: junior subjective synonym. *Thereva plebeja* (Linnaeus, 1758: 589)]]]. *Thereva plebeja* (Linnaeus, 1758: 589). 100446 Therevidae.
- lugubris** Fabricius, 1787: 328 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank [*Thereva lugubris* (Fabricius, 1787: 328) [21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103)]]]. *Thereva unica* (Harris, 1779: 103). 100105 Therevidae.
- lugubris** Meigen, 1804: 214 (*Bibio*). PA 70 Unavailable: misidentification. [*Bibio lugubris* Fabricius, 1787: 328. [48 Available, invalid: obsolete combination/rank. *Thereva lugubris* (Fabricius, 1787: 328). [21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103)]]]. *Thereva funebris* Meigen, 1820: 121. 100105 Therevidae. [Meigen (1804: 214) explicitly attributed this name to Fabricius (1787: 328), and recognized *Bibio lugubris* Meigen, 1804: 214, as a misidentification (1820: 121): "*B. lugubris* Fabr. ist eine andere Art, die weiter vorne vorkommt." Meigen (1820: 118) redescribed the Fabricius species as *Thereva lugubris* in the same work].

- lugubris* Gmelin, 1790: 2832 (*Musca*). PA 80 Unavailable: subsequent usage [*Bibio lugubris* Fabricius, 1787: 328. [48 Available, invalid: obsolete combination/rank. *Thereva lugubris* (Fabricius, 1787: 328). [21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103)]]]. *Thereva unica* (Harris, 1779: 103). 100105 Therevidae.
- lugubris* Macquart, 1840: 24 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank. *Melanotherева lugubris* (Macquart, 1840: 24). 100136 Therevidae. [The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva lugubris* Macquart, 1841: 302].
- lunulata* Zetterstedt, 1838: 523 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Spiriverpa lunulata* (Zetterstedt, 1838: 523). 100130 Therevidae.
- lunulata clausa* Frey, 1911: 55 (*Thereva*). PA [48 Available, invalid: obsolete combination/rank. *Spiriverpa clausa* (Zetterstedt, 1838: 523). [21 Available, invalid: junior subjective synonym. *Spiriverpa lunulata* (Zetterstedt, 1838: 523).] *Spiriverpa lunulata* (Zetterstedt, 1838: 523). 100322 Therevidae. [Frey (1911: 55) proposed the species-group name *clausa* as a variety of *Thereva lunulata* Zetterstedt, 1838: 523, making the original rank for this name "subspecies" according to Article 45.5 of the Code (ICZN 1999). In the *Catalog of Palaearctic Diptera*, Lyneborg (1989: 24) treated *clausa* Frey as a junior synonym of *Spiriverpa lunulata* Zetterstedt without recognizing the subspecific status of the name *clausa*].
- luteiventris* Philippi, 1865: 769 (*Thereva*). NT 10 Available, valid: [no change]. *Thereva luteiventris* Philippi, 1865: 769. 100671 Therevidae.
- lutescens* Loew, 1871: 196 (*Thereva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva lutescens* Loew, 1871: 196. [21 Available, invalid: junior subjective synonym. *Thereva punctipennis* Wiedemann, 1821: 111]]. *Thereva punctipennis* Wiedemann, 1821: 111. 100446 Therevidae.
- macdunnoughi* Cole, 1925: 87 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva macdunnoughi* Cole, 1925: 87. 100130 Therevidae.
- macedonica* Kröber, 1937: 319 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva macedonica* Kröber, 1937: 319. 100322 Therevidae.
- macularis* Wiedemann, 1828: 558 (*Thereva*). AF 48 Available, invalid: obsolete combination/rank. *Neotherevella macularis* (Wiedemann, 1828: 558). 100065 Therevidae.
- maculicornis* Jaennicke, 1867: 353 (*Thereva*). NT 10 Available, valid: [no change]. *Thereva maculicornis* Jaennicke, 1867: 353. 100671 Therevidae.
- maculipennis* Kröber, 1911: 492 (*Thereva*). NT 58 Unavailable: published in synonymy, not subsequently validated [*Thereva maculicornis* Jaennicke, 1867: 45]. *Thereva maculicornis* Jaennicke, 1867: 45. NEW Therevidae. [Kröber (1911: 492) stated that the type of *Thereva maculicornis* Jaennicke, 1867: 45, is labeled as "*Th. maculipennis* Jaen." but did not use "*maculipennis*" as a replacement name for "*maculicornis*."]
- maculipennis* Kröber, 1912: 499 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva maculipennis* Kröber, 1912: 499. 100322 Therevidae.
- magnicornis* Meunier, 1908: 260 (*Thereva*). PA FOSSIL 48 Available, invalid: obsolete combination/rank. *Glaesorthactia magnicornis* (Meunier, 1908: 260). 100246 Therevidae.
- major* Matsumura, 1905: 79 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva major* Matsumura, 1905: 79. 100322 Therevidae.
- manchoulensis* Ôuchi, 1943: 483 (*Thereva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva manchoulensis* Ôuchi, 1943: 483. 100322 Therevidae. [Ôuchi (1943: 483) proposed *manchoulensis* in the genus *Thereva*, subgenus *Thereva*, as "*Therva (Therva)* [sic] *manchoulensis*, sp. nov."].
- marcelini* Théobald, 1937: 146 (*Thereva*). PA FOSSIL 10 Available, valid: [no change]. *Thereva marcelini* Théobald, 1937: 146. 100246 Therevidae.
- marginata* Jaennicke, 1867: 79 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva marginula* Meigen, 1820: 120]. *Thereva marginula* Meigen, 1820: 120. 100136 Therevidae.
- marginata* Fabricius, 1781: 413 (*Bibio*). PA 21 Available: invalid: junior subjective synonym. *Thereva plebeja* (Linnaeus, 1758: 589). 100390 Therevidae. [Illiger (1807: 424) first identified *Bibio marginata* Fabricius as a synonym of *Musca plebeja* Linnaeus on the basis of Rossi's (1790: 274) observation of finding specimens matching the descriptions of both names in copula].
- marginata* Meigen, 1820: 121 (*Thereva*). PA 50 Unavailable: proposed in synonymy and not subsequently valid [*Thereva marginula* Meigen, 1820: 120]. *Thereva marginula* Meigen, 1820: 120. 100105 Therevidae. [When Meigen (1820: 120) described *Thereva marginula* he mentioned the Megerle manuscript name "*marginata*" of Megerle, and noted the primary homonymy with *Bibio marginata* Fabricius. While Meigen did redescribe *Bibio marginata* Fabricius in his 1804 work (1804: 216), he apparently deleted it from his 1820 work as it has been placed in synonymy by Illiger (1807: 424). Bezzi (1903: 209) and Kertész (1909: 155) list "*marginata* Meg. in litt.

- ap[ud] Meig." as a junior synonym of *Thereva marginula* Meigen, 1820: 120. Kröber (1913: 58) erroneously listed several references under *Thereva marginula* Meigen, 1820: 120, as "*marginata*".
- marginula** Meigen, 1820: 120 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva marginula* Meigen, 1820: 120. 100322 Therevidae. [The second edition of Meigen=s 1820 work presents a subsequent usage of this name: *Thereva marginula* Meigen, 1851: 92. See *marginata* Meigen for further discussion of this name].
- marmorata** Kröber, 1912: 699 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva marmorata* Kröber, 1912: 699. 100322 Therevidae.
- maruyama** Kröber, 1937: 281 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva maruyamana* Matsumura, 1916: 337. [48 Available, invalid: obsolete combination/rank. *Spiriverpa maruyamana* (Matsumura, 1916: 337). [Available, invalid: junior subjective synonym. *Spiriverpa argentata* (Matsumura, 1905: 80)]]]. *Spiriverpa argentata* (Matsumura, 1905: 80). NEW Therevidae.
- maruyamana** Matsumura, 1916: 337 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Spiriverpa maruyamana* (Matsumura, 1916: 337). [Available, invalid: junior subjective synonym. *Spiriverpa argentata* (Matsumura, 1905: 80)]]]. *Spiriverpa argentata* (Matsumura, 1905: 80). 100210 Therevidae.
- melaleuca** Loew, 1847: 44 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva melaleuca* Loew, 1847: 44 [48 Available, invalid: obsolete combination/rank. *Pandivirilia melaleuca* (Loew, 1847: 44)]]]. *Pandivirilia melaleuca* (Loew, 1847: 44). 100322 Therevidae.
- melanoneura** Loew, 1872: 74 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva melanoneura* Loew, 1872: 74 [48 Available, invalid: obsolete combination/rank. *Ozodiceromyia melanoneura* (Loew, 1872: 74)]]]. *Ozodiceromyia melanoneura* (Loew, 1872: 74). 100130 Therevidae.
- melanophleba** Loew, 1876: 317 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva melanophleba* Loew, 1876: 317 [48 Available, invalid: obsolete combination/rank. *Tabudamima melanophleba* (Loew, 1876: 317)]]]. *Tabudamima melanophleba* (Loew, 1876: 317). 100130 Therevidae.
- melanostoma** Loew, 1856: 33 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva melanostoma* Loew, 1856: 33 [48 Available, invalid: obsolete combination/rank. *Xestomyzina melanostoma* (Loew, 1856: 33)]]]. *Xestomyzina melanostoma* (Loew, 1856: 33). 100322 Therevidae.
- metallica** Kröber, 1914: 68 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia metallica* (Kröber, 1914: 68). 100130 Therevidae.
- mettalica** Kröber, 1914: 61 (*Thereva*). NE 56 Unavailable: incorrect original spelling [*Thereva metallica* Kröber, 1914: 68. [48 Available, invalid: obsolete combination/rank. *Ozodiceromyia metallica* (Kröber, 1914: 68)]]]. *Ozodiceromyia metallica* (Kröber, 1914: 68). NEW Therevidae.
- microcephala** Loew, 1847: 40 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva microcephala* Loew, 1847: 40. 100696 Therevidae.
- mirabilis** Lyneborg, 1987: 463 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva mirabilis* Lyneborg, 1987: 463. 100325 Therevidae.
- misella** Walker, 1835: 472 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus misellus* (Walker, 1835: 472). 100076 Therevidae.
- modesta** Becker, 1922: 31 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva cinifera* Meigen, 1830: 322. 100322 Therevidae.
- monos** Harris, 1779: 103 (*Sylvicola*). PA 48 Available, invalid: obsolete combination/rank [*Thereva monos* (Harris, 1779: 103). [21 Available, invalid: junior subjective synonym. *Thereva nobilitata* (Fabricius, 1775: 757)]]]. *Thereva nobilitata* (Fabricius, 1775: 757). 100446 Therevidae.
- monticola** Becker, 1922: 29 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva monticola* Becker, 1922: 29. 100322 Therevidae.
- morio** Rondani, 1863: 44 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank [*Melanothereva morio* (Rondani, 1863: 44). [21 Available, invalid: junior subjective synonym. *Melanothereva lugubris* (Macquart, 1840: 24)]]]. *Melanothereva lugubris* (Macquart, 1840: 24). 100464 Therevidae.
- muscaria** Fallén, 1815: 232 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Phasia muscaria* (Fallén, 1815: 232). [21 Available, invalid: junior subjective synonym. *Phasia obesa* (Fabricius, 1798: 561)]]]. *Phasia obesa* (Fabricius, 1798: 561). 100673 Tachinidae. [The publication *Diptera Sueciae* presents a subsequent usage of this name: *Thereva muscaria* Fallén, 1820: 3].
- nana** Fallén, 1815: 233 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Catharosia nana* (Fallén, 1815: 233). [21 Available, invalid: junior subjective synonym. *Catharosia pygmaea* (Fallén, 1815: 234)]]]. *Catharosia pygmaea* (Fallén, 1815: 234). 100673 Tachinidae. [The publication *Diptera Sueciae* presents a subsequent usage of this name: *Thereva nana* Fallén, 1820: 4].

- nana** Wollaston, 1858: 115 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Irwiniella nana* (Wollaston, 1858: 115). 100460 Therevidae.
- nana** Cole, 1959: 148 (*Thereva*). NE 34 Available, invalid: junior homonym, primary [*Thereva nana* Fallén, 1815: 233].
- Ozodiceromyia nanella** (Cole, 1960: 118) [Senior objective synonym of *Thereva nana* Cole, 1959: 148]. 100084 Therevidae.
- nanella** Cole, 1960: 118 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia nanella* (Cole, 1960: 118). 100130 Therevidae.
- natalensis** Lyneborg, 1976: 330 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva natalensis* Lyneborg, 1976: 330. 100463 Therevidae.
- nebulosa** Kröber, 1912: 264 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva nebulosa* Kröber, 1912: 264. 100130 Therevidae.
- neglecta** Kröber, 1912: 407 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva neglecta* Kröber, 1912: 407. 100322 Therevidae.
- neomexicana** Cole, 1923: 117 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva neomexicana* Cole, 1923: 117. 100130 Therevidae.
- nervosa** Loew, 1847: 28 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva nervosa* Loew, 1847: 28. 100446 Therevidae.
- nervosa** Walker, 1848: 223 (*Thereva*). NE 34 Available, invalid: junior homonym, primary [*Thereva nervosa* Loew, 1847: 28]. *Tabuda varia* (Walker, 1848: 221) [Senior subjective synonym of *Tabuda nervosa* (Walker, 1848: 223)]. 100450 Therevidae.
- nigella** Wiedemann, 1828: 232 (*Thereva*). OR 12 Available, valid: not recognized (*nomen dubium*). *Thereva nigella* Wiedemann, 1828: 232. NEW Therevidae. [Brunetti (1920: 229) translated Wiedemann's original description of *Thereva nigella* Wiedemann and considered this name valid. *Thereva nigella* Wiedemann, 1828: 232, does not appear, however, in the 1975 catalog of Oriental Diptera].
- nigra** Say, 1823: 40 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia nigra* (Say, 1823: 40). 100130 Therevidae.
- nigrifrons** Kröber, 1913: 256 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva nigrifrons* Kröber, 1913: 256. 100322 Therevidae.
- nigripennis** Ruthe, 1831: 1215 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Dichoglana nigripennis* (Ruthe, 1831: 1215). 100446 Therevidae.
- nigripennis** Loew, 1847: 42 (*Thereua*). PA 27 Available, invalid: unjustified new name [*Thereva rustica* Loew, 1840: 531]. *Thereva rustica* Loew, 1840: 531. 100322 Therevidae. [Loew (1847: 43) reasoned that his *Thereva rustica* Loew, 1840: 531, was preoccupied by *Bibio rustica* Panzer and *Bibio rustica* Fallén although these names were not published in combination with *Thereva* (before Loew's statement). The Fallén and Panzer names were never in combination with *Thereva*].
- nigripilosa** Cole, 1923: 110 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva nigripilosa* Cole, 1923: 110. 100130 Therevidae.
- nitida** Macquart, 1834: 421 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva nitida* Macquart, 1834: 421. 100322 Therevidae.
- nitidifrons** Kröber, 1913: 17 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva nitidifrons* Kröber, 1913: 17. 100322 Therevidae.
- nitidiventris** Kröber, 1939: 395 (*Thereva*). AF 48 Available, invalid: obsolete combination/rank [*Pseudothereva nitidiventris* (Kröber, 1939: 395). [21 Available, invalid: junior subjective synonym. *Pseudothereva kijabea* (Séguy, 1938: 334)]. *Pseudothereva kijabea* (Séguy, 1938: 334). 100098 Therevidae.
- nitoris** Coquillett, 1894: 101 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Spiriverpa nitoris* (Coquillett, 1894: 101). 100130 Therevidae.
- nivaria** Walker, 1852: 159 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva nivaria* Walker, 1852: 159. 100462 Therevidae.
- nivea** Kröber, 1914: 64 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ammonaios niveus* (Kröber, 1914: 64). 100130 Therevidae.
- niveifacies** Kröber, 1912: 684 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva circumscripta* Loew, 1847: 19. 100322 Therevidae.
- niveipennis** Eversmann, 1834: 423 (*Thereva*). PA 55 Unavailable: *nomen nudum*. 100446 Therevidae.
- niveipennis** Kröber, 1914: 66 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva niveipennis* Kröber, 1914: 66. 100130 Therevidae.
- nobilis** Gmelin, 1790: 2829 (*Musca*). PA 60 Unavailable: misspelling [*Bibio nobilitata* Fabricius, 1775: 757. [Available,

- invalid: obsolete combination/rank. *Thereva nobilitata* (Fabricius, 1775: 757)]. *Thereva nobilitata* (Fabricius, 1775: 757). NEW Therevidae.
- nobilitata** Fabricius, 1775: 757 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank. *Thereva nobilitata* (Fabricius, 1775: 757). 100105 Therevidae.
- nobilitata** Loew, 1840: 528 (*Thereva*). PA 80 Unavailable: subsequent usage [*Thereva nobilitata* (Fabricius, 1775: 757)]. *Thereva nobilitata* (Fabricius, 1775: 757). NEW Therevidae. [Loew (1840: 528) attributed *Thereva nobilitata* to Latreille, but it is clear from Loew's use of the name in his subsequent works on *Thereva* that he was referring to *Thereva nobilitata* (Fabricius, 1775: 757)].
- nobilitata oculata** Kertész, 1909: 157 (*Thereva*). PA 80 Unavailable: subsequent usage [*Thereva oculata* Egger, 1859: 401] *Thereva oculata* Egger, 1859: 401. NEW Therevidae. [Egger proposed *Thereva oculata* at the rank of species. Several authors after Kertész (1909: 157), including Kröber (1913g: 59, 1925: 45, 1937: 282), considered *Thereva oculata* Egger, 1859: 401, a variety (inferred as subspecies from the notation "var. *oculata* Egg.") of *Thereva nobilitata* (Fabricius, 1775: 757). In the *Catalog of Palaearctic Diptera*, Lyneborg (1989: 24) listed *Thereva oculata* Egger, 1859: 401, with the rank of species; Lyneborg & Spitzer (1974) noted their disagreement with previous authors who considered *oculata* Egger an infraspecific name for *Thereva nobilitata* Fabricius].
- notabilis** Macquart, 1840: 24 (*Thereva*). NT 10 Available, valid: [no change]. *Thereva notabilis* Macquart, 1840: 24. 100671 Therevidae. [The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva notabilis* Macquart, 1841: 302. According to M. E. Irwin ("Neotropical Catalogue of Therevidae," unpublished mss.), *Thereva notabilis* Macquart, 1840: 24, belongs to the Neotropical genus *Entisia* Oldroyd, 1968].
- notata** Wiedemann, 1821: 114 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia notata* (Wiedemann, 1821: 114). 100087 Therevidae.
- nova** Kröber, 1913: 158 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva nova* Kröber, 1913: 158. 100322 Therevidae.
- novella** Coquillett, 1893: 200 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Acrosathe novella* (Coquillett, 1893: 200). 100130 Therevidae.
- nuba** Wiedemann, 1828: 559 (*Thereva*). AF 48 Available, invalid: obsolete combination/rank. *Irwinella nuba* (Wiedemann, 1828: 559). 100460 Therevidae.
- nuda** Loew, 1856: 33 (*Thereva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva nuda* Loew, 1856: 33 [48 Available, invalid: obsolete combination/rank. *Ruppellia nuda* (Loew, 1856: 33). [Available, invalid: junior subjective synonym. *Ruppellia semiflava* Wiedemann, 1830: 625]]]. *Ruppellia semiflava* Wiedemann, 1830: 625. 100322 Therevidae.
- nudifemorata** Macquart, 1846: 231 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarthynchus nudifemoratus* (Macquart, 1846: 230). 100691 Therevidae. [The separate of this article (Macquart 1840b) presents a subsequent usage of this name: *Thereva nudifemorata* Macquart, 1846: 103].
- obesa** Fabricius, 1798: 561 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Phasia obesa* (Fabricius, 1798: 561). 100673 Tachinidae.
- obscuripes** Kröber, 1913: 150 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva obscuripes* Kröber, 1913: 150. 100322 Therevidae.
- obtecta** Loew, 1847: 38 (*Thereva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva obtecta* Loew, 1847: 38. 100446 Therevidae.
- occulta** Becker, 1908: 25 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva occulta* Becker, 1908: 25. 100322 Therevidae.
- occulta glabra** Báez, 1982: 83 (*Thereva*). PA 54 Unavailable: infraspecific name proposed after 1960. *Thereva occulta* Becker, 1908: 25. 100322 Therevidae. [Báez proposed "*glabra*" as a variety of *Thereva occulta* Becker, making *glabra* an infrasubspecific name (see Lyneborg 1989: 31). According to Article 10.2 of the Code, *Thereva glabra* Báez, 1982: 83, is an unavailable species-group name (ICZN 1999)].
- ochropa** Thomson, 1869: 477 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarthynchus ochropus* (Thomson, 1869: 477). 100076 Therevidae.
- oculata** Egger, 1859: 401 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva oculata* Egger, 1859: 401. 100322 Therevidae. [Egger proposed *Thereva oculata* at the rank of species. Several authors after Kertész (1909: 157), including Kröber (1913: 59, 1925: 45, 1937: 282), considered *Thereva oculata* Egger a variety of *Thereva nobilitata* (Fabricius, 1775: 757). In the *Catalog of Palaearctic Diptera*, Lyneborg (1989: 24) reinstated *Thereva oculata* Egger to its original species rank].
- olivieri** Becker, 1902: 32 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva olivieri* Macquart, 1840: 23. [48 Available, invalid: obsolete combination/rank. *Actorthia olivieri* (Macquart, 1840: 23)]]]. *Actorthia olivieri* (Macquart, 1840: 23). NEW Therevidae.

- olivierii* Macquart, 1840: 23 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Actorthia olivierii* (Macquart, 1840: 23). 100632 Therevidae. [The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva oliverii* Macquart, 1841: 301].
- opaca* Kröber, 1913: 255 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva opaca* Kröber, 1913: 255. 100322 Therevidae.
- ordubadica* Paramonov, 1927: 2 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva ordubadica* Paramonov, 1927: 2. 100322 Therevidae.
- ornata* Kröber, 1912: 677 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva ornata* Kröber, 1912: 677. 100322 Therevidae.
- otiosa* Coquillett, 1893: 199 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Acrosathe otiosa* (Coquillett, 1893: 199). 100130 Therevidae.
- pachyceras* Williston, 1908: 206 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Pallicephala pachyceras* (Williston, 1908: 206). NEW Therevidae.
- pacifica* Cole, 1923: 103 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Acrosathe pacifica* (Cole, 1923: 103). 100130 Therevidae.
- pallipes* Loew, 1869: 121 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva pallipes* Loew, 1869: 121. 100446 Therevidae.
- panotshinii* Paramonov, 1927: 3 (*Thereva*) PA 10 Available, valid: [no change]. *Thereva panotshinii* Paramonov, 1927: 3. 100322 Therevidae.
- pennipes* Fabricius, 1781: 450 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Trichopoda pennipes* (Fabricius, 1781: 450). 100085 Tachinidae.
- persequa* Walker, 1852: 158 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva persequa* Walker, 1852: 158. 100462 Therevidae.
- phaeoptera* Costa, 1883: 76 (*Thereva*). PA 12 Available, valid: not recognized (*nomen dubium*). *Thereva phaeoptera* Costa, 1883: 76. NEW Therevidae.
- pictipennis* Wiedemann, 1821: 113 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Cyclotelus pictipennis* (Wiedemann, 1821: 113). 100354 Therevidae.
- pilifrons* Kröber, 1912: 678 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva pilifrons* Kröber, 1912: 678. 100322 Therevidae.
- pilipes* Fabricius, 1805: 220 (*Thereva*). NE 12 Available, valid: not recognized (*nomen dubium*). *Thereva pilipes* Fabricius, 1805: 220. NEW Therevidae. [*Thereva pilipes* Fabricius, 1805: 220, is probably a name for a tachinid taxon, because Fabricius used *Thereva* to name (phasiine) tachinids, in the modern sense, and used *Bibio* for therevids].
- pinguis* Loew, 1850: 40 (*Thereua*) PA FOSSIL 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva pinguis* Loew, 1850: 40. 100246 Therevidae.
- plabeja* Latreille, 1805: 327 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva plebeja* (Linnaeus, 1758: 589)]. *Thereva plebeja* (Linnaeus, 1758: 589). NEW Therevidae.
- plagiata* Harris, 1835: 596 (*Thereva*). NE 55 Unavailable: *nomen nudum*. *Stichopogon trifasciatus* (Say, 1835: 596). 100085 Asilidae. [Walker (1848: 223) presented a redescription (=subsequent usage) of *Thereva plagiata* attributed to "Harris, Cat. Ins. Massachusetts." Osten Sacken (1887: 170) and Martin & Wilcox (1965: 385) listed *Thereva plagiata* Walker 1848: 223, as a junior subjective synonym of *Stichopogon fasciatus* (Say, 1923: 51), but this name also appears in the list of *nomina nuda* on page 1115 in the *Catalog of the Diptera of North America North of Mexico*. Irwin & Lyneborg (1981: 270) listed *Thereva plagiata* Harris, 1835: 596, as an "unplaced species of [Nearctic] Therevidae" with the status of *nomen nudum* "later referred to *Stichopogon trifasciatus* (Say) (Diptera: Asilidae) by Osten Sacken (1887: 170)."
- plebeia* Fabricius, 1781: 19 (*Bibio*). PA 60 Unavailable: misspelling [*Bibio plebeja* (Linnaeus, 1758: 589)]. [48 Available, invalid: obsolete combination/rank. *Thereva plebeja* (Linnaeus, 1758: 589)]. *Thereva plebeja* (Linnaeus, 1758: 589). NEW Therevidae.
- plebeia* Latreille, 1805: 326 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva plebeja* (Linnaeus, 1758: 589)]. *Thereva plebeja* (Linnaeus, 1758: 589). NEW Therevidae. [Meigen (1820: 117) used the spelling "*plebeia*" for all references to his third species of *Thereva*, "*Thereva plebeia*. Linn.", including Latreille, 1805: 326. All instances of "*plebeia*" in combination with *Thereva* are considered misspellings of *Thereva plebeja* (Linnaeus, 1758: 589)].
- plebeia* Macquart, 1839: 106 (*Thereva*). PA 70 Unavailable: misidentification [*Thereva plebeja* (Linnaeus, 1758: 589)]. *Thereva occulta* Becker, 1908: 25. 100050 Therevidae.
- plebeius* Schrank, 1803: 2370 (*Bibio*). PA 70 Unavailable: misidentification [*Bibio plebeja* (Linnaeus, 1758: 589)]. [48 Available, invalid: obsolete combination/rank. *Thereva plebeja* (Linnaeus, 1758: 589)]. *Clorismia ardea* (Fabri-

- cus, 1794: 272). 100446 Therevidae. [Macquart (1826: 71) listed *Bibio plebeius* Schrank, 1803: 2370 (female), as a synonym of "Thérèze voisine; *T. confinis*, Meig."].
- plebeja Schellenberg, 1803: 29 (*Bibio*). PA 80 Unavailable: subsequent usage [*Bibio plebeja* (Linnaeus, 1758: 589)]. NEW *Thereva plebeja* (Linnaeus, 1758: 589). Therevidae.
- plebeja Schrank, 1803: 2970 (*Bibio*). PA 70 Unavailable: misidentification [*Bibio plebeja* (Linnaeus, 1758: 589). [48 Available, invalid: obsolete combination/rank. *Thereva plebeja* (Linnaeus, 1758: 589)]. *Clorismia ardea* (Fabricius, 1794: 272). 100446 Therevidae. [Macquart (1826: 71) listed *Bibio plebeius* Schrank, 1803: 2370 (female), as a synonym of "Thérèze voisine; *T. confinis*, Meig."].
- plebeja Linnaeus, 1758: 589 (*Musca*). PA 48 Available, invalid: obsolete combination/rank. *Thereva plebeja* (Linnaeus, 1758: 589). 100056 Therevidae.
- plumipes Fabricius, 1805: 220 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Trichopoda plumipes* (Fabricius, 1805: 220). 100710 Tachinidae.
- poecilopa Loew, 1871: 320 (*Thereva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva poecilopa* Loew, 1871: 320 [48 Available, invalid: obsolete combination/rank. *Ammothereva poecilopa* (Loew, 1871: 320)]]]. *Ammothereva poecilopa* (Loew, 1871: 320). 100322 Therevidae.
- poeciloptera Loew, 1847: 32 (*Thereva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva poeciloptera* Loew, 1847: 32. [21 Available, invalid: junior subjective synonym. *Thereva spilopectera* Wiedemann, 1824: 20]]. *Thereva spilopectera* Wiedemann, 1824: 20. 100446 Therevidae.
- porcellus Sherborn, 1933: 1027 (*Thereva*). NOT APPLICABLE 55 Unavailable: *nomen nudum*. NEW. [This combination resulted from a bookkeeping error in Sherborn's "Index to Trivalia under Genera (Prionopus - Zyxomma; addenda acetocae - voltzi)" under *Thereva*. Of the twenty-one entries for the species-group name "porcellus" in the alphabetic index (see Sherborn 1922-1932), the confusion is probably linked to *Theretra porcellus* Huebner, 1820: 135].
- porrectifrons Kröber, 1937: 318 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva porrectifrons* Kröber, 1937: 318. 100322 Therevidae.
- powelli Séguéy, 1930: 108 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva powelli* Séguéy, 1930: 108. 100322 Therevidae.
- praecedens Walker, 1857: 118 (*Thereva*). OR 10 Available, valid: [no change]. *Thereva praecedens* Walker, 1857: 118. 100462 Therevidae.
- praecox Egger, 1859: 403 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva praecox* Egger, 1859: 403. 100322 Therevidae.
- praestans Collin, 1948: 100 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva handlirschi* Kröber, 1912: 696. 100075 Therevidae.
- pseudocolata Cole, 1923: 121 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva pseudocolata* Cole, 1923: 121. 100130 Therevidae.
- punctipennis Wiedemann, 1821: 111 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva punctipennis* Wiedemann, 1821: 111. 100322 Therevidae.
- purpurariae Frey, 1958: 12 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Irwinella purpurariae* (Frey, 1958: 12). 100635 Therevidae.
- pygmaea Fallén, 1815: 234 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Catharosia pygmaea* (Fallén, 1815: 234). 100673 Tachinidae. [The publication *Diptera Sveciae* presents a subsequent usage of this name: *Thereva pygmaea* Fallén, 1820: 4].
- pygmaea Cole, 1923: 89 (*Thereva*). NE 34 Available, invalid: junior homonym, primary [*Thereva pygmaea* Fallén, 1815: 234. [48 Available, invalid: obsolete combination/rank. *Catharosia pygmaea* (Fallén, 1815: 234)]]]. *Ozodiceromyia nanella* (Cole, 1960: 118) [Senior objective synonym of *Thereva pygmaea* Cole, 1923: 89]. 100083 Therevidae.
- quinque vittata Macquart, 1847: 49 (*Thereva*). AU 56 Unavailable: incorrect original spelling [*Thereva quinquevittata* Macquart, 1847: 49. [48 Available, invalid: obsolete combination/rank. *Anabarhynchus quinquevittatum* (Macquart, 1847: 49)]]]. *Anabarhynchus quinquevittatum* (Macquart, 1847: 49). NEW Therevidae. [The name "quinque vittata" is an unhyphenated compound species-group name originally proposed by Macquart at the rank of species. The separate of this article (Macquart 1847b) presents a subsequent usage of this name: *Thereva quinque vittata* Macquart, 1847: 65].
- quinquecellata Macquart, 1847: 104 (*Thereva*). AU 56 Unavailable: incorrect original spelling [*Thereva quinquevittata* Macquart, 1847: 49. [48 Available, invalid: obsolete combination/rank. *Anabarhynchus quinquevittatum* (Macquart, 1847: 49)]]]. *Anabarhynchus quinquevittatum* (Macquart, 1847: 49). 100076 Therevidae. [The separate of this article (Macquart 1847b) presents a subsequent usage of this name: *Thereva quinquecellata* Macquart, 1847: 120].

- quinquevittata** Macquart, 1847: 49 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus quinquevittatum* (Macquart, 1847: 49). 100076 Therevidae. [*Thereva quinquevittata* Macquart, 1847: 49, is the corrected original spelling for *Thereva "quinque vittata"* Macquart, 1847: 49, and first appears in *Catalogus Diptorum* (Kertész 1909: 159)].
- reclusa** Lyneborg, 1976: 315 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva reclusa* Lyneborg, 1976: 315. 100463 Therevidae.
- rhomboidalis** Kröber, 1912: 498 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva rhomboidalis* Kröber, 1912: 498. 100322 Therevidae.
- robusta** Kröber, 1912: 673 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva robusta* Kröber, 1912: 673. 100322 Therevidae.
- rodanii** Kröber, 1925: 49 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva rondanii* Jaennicke, 1867: 79. [21 Available, invalid: junior subjective synonym. *Thereva microcephala* Loew, 1847: 40]]. *Thereva microcephala* Loew, 1847: 40. NEW Therevidae.
- rondanii** Jaennicke, 1867: 79 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva microcephala* Loew, 1847: 40. 100322 Therevidae.
- rossica** Becker, 1922: 29 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva rossica* Becker, 1922: 29. 100322 Therevidae.
- rubicunda** Panzer, 1804: 137 (*Thereva*). Patria ignota 12 Available, valid: not recognized (*nomen dubium*). *Thereva rubicunda* Panzer, 1804: 137. NEW Therevidae. [*Thereva rubicunda* Panzer, 1804: 137, is probably a name for a tachinid taxon, because Panzer followed Fabricius in using *Thereva* to name (phasiine) tachinids, in the modern sense, and *Bibio* for therevids].
- ruficaudis** Wiedemann, 1820: 123 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Clorismia ruficaudis* (Wiedemann, 1820: 123). [21 Available, invalid: junior subjective synonym. *Clorismia ardea* (Fabricius, 1794: 272)]. *Clorismia ardea* (Fabricius, 1794: 272). 100446 Therevidae. [*Thereva ruficaudis* Wiedemann is correctly cited as *Thereva ruficaudis* Wiedemann in Meigen, 1820: 123. The second edition of Meigen's 1820 work presents a subsequent usage: *Thereva ruficaudis* Wiedemann in Meigen, 1851: 94].
- ruficornis** Macquart, 1840: 25 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia ruficornis* (Macquart, 1840: 304). 100130 Therevidae. [The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva ruficornis* Macquart, 1841: 303].
- ruficornis** Gimmerthal, 1847: 155 (*Thereva*). PA 12 Available, valid: not recognized (*nomen dubium*). *Thereva ruficornis* Gimmerthal, 1847: 155. 100322 Therevidae. [*Thereva ruficornis* Gimmerthal, 1847: 155 is in the list of "Doubtful species" of Palaearctic Therevidae, identified as a junior primary homonym of *Thereva ruficornis* Macquart, 1840: 25 (Lyneborg 1989: 35)].
- rufipes** Meigen, 1804: 216 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank [*Thereva rufipes* (Meigen, 1804: 216). 21 Available, invalid: junior subjective synonym. *Thereva flavipes* (De Geer, 1776: 185)]. *Thereva flavipes* (De Geer, 1776: 185). 100136 Therevidae. [Meigen (1804: 217) lists "*Nemotelus (flavipes)* sp. 7" as a synonym of *Bibio rufipes* Meigen, 1804: 216].
- rufipes** Macquart, 1834: 419 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank [*Dialineura rufipes* (Macquart, 1834: 419). [21 Available, invalid: junior subjective synonym. *Dialineura anilis* (Linnaeus, 1760: 442)]. *Dialineura anilis* (Linnaeus, 1760: 442). 100136 Therevidae.
- rufiventris** Kröber, 1912: 679 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva rufiventris* Kröber, 1912: 679. 100322 Therevidae.
- rustica** Fallén, 1814: 4 (*Bibio*). PA 70 Unavailable: misidentification [*Bibio rustica* Panzer, 1804: 21. [48 Available, invalid: obsolete combination/rank. *Clorismia rustica* (Panzer, 1804: 21)]. *Thereva plebeja* (Linnaeus, 1758: 589). 100105 Therevidae.
- rustica** Loew, 1840: 531 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva rustica* Loew, 1840: 531. 100322 Therevidae. [Schiner (1860: 163), Bezzi (1903: 209), Kertész (1909: 156), and Kröber (1913: 59, 1925: 44, 1937: 282) synonymized *Thereva nigripes* Loew, 1847: 42, with *Thereva rustica* Loew, 1840: 531, but treated *Thereva nigripes* as a valid replacement name for *Thereva rustica* Loew, 1840: 531. Lyneborg also recognized this synonymy and correctly used *Thereva rustica* Loew, 1840: 531, as the valid name, treating *Thereva nigripes* Loew, 1847: 42, as an unnecessary change of name].
- rusticus** Becker, 1902: 32 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva rustica* Loew, 1840: 531]. *Thereva rustica* Loew, 1840: 531. NEW Therevidae.
- satanas** Kröber, 1912: 503 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva satanas* Kröber, 1912: 503. 100322 Therevidae.
- schineri** Jaennicke, 1867: 352 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank. *Anabarhynchus schineri* (Jaennicke, 1867: 352). 100137 Therevidae.

- scutellaris* Walker, 1857: 133 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank. *Cyclotelus scutellaris* (Walker, 1857: 133). 100319 Therevidae.
- segmentata* Speiser, 1910: 81 (*Thereva*). AF 21 Available, invalid: junior subjective synonym. *Thereva seminitida seminitida* Becker, 1909: 115. 100098 Therevidae.
- seminitida* Becker, 1909: 115 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva seminitida* Becker, 1909: 115. 100463 Therevidae.
- seminitida occidentalis* Lyneborg, 1976: 325 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva seminitida occidentalis* Lyneborg, 1976: 325. 100463 Therevidae.
- seminitida seminitida* Becker, 1909: 115 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva seminitida seminitida* Becker, 1909: 115. 100463 Therevidae.
- seminitida stuckenbergi* Lyneborg, 1976: 326 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva seminitida stuckenbergi* Lyneborg, 1976: 326. 100463 Therevidae.
- semirufa* Kröber, 1912: 687 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva semirufa* Kröber, 1912: 687. 100322 Therevidae.
- semitaria* Coquillett, 1893: 198 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Arenigena semitaria* (Coquillett, 1893: 198). 100130 Therevidae.
- senex* Walker, 1848: 224 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Spiriverpa senex* (Walker, 1848: 224). 100130 Therevidae.
- senilis* Fabricius, 1805: 68 (*Bibio*). NT 34 Available, invalid: junior homonym, primary [*Bibio senilis* Panzer, 1798: 22]. *Penniverpa lyneborgi* Irwin & Webb, 1992: 88 [Senior objective homonym for *Bibio senilis* Fabricius, 1805: 68]. 100136 Therevidae.
- senilis* Wiedemann, 1821: 112 (*Thereva*). NT 80 Unavailable: subsequent usage [*Bibio senilis* Fabricius, 1805: 68]. *Penniverpa lyneborgi* Irwin & Webb, 1992: 88. NEW Therevidae.
- sequa* Walker, 1852: 157 (*Thereva*). OR 48 Available, invalid: obsolete combination/rank. *Psilocephala sequa* (Walker, 1852: 157). 100691 Therevidae.
- sequens* Walker, 1852: 158 (*Thereva*). OR 48 Available, invalid: obsolete combination/rank. *Psilocephala sequens* (Walker, 1852: 158). 100691 Therevidae.
- simulata* Malloch, 1932: 244 (*Thereva*). NT 10 Available, valid: [no change]. *Thereva simulata* Malloch, 1932: 244. 100464 Therevidae.
- singula* Walker, 1848: 227 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Eupsilocephala singula* (Walker, 1848: 227). 100691 Therevidae.
- sobrina* Kröber, 1912: 698 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva sobrina* Kröber, 1912: 698. 100322 Therevidae.
- sordida* Panzer, 1805: 19 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank [*Thereva sordida* (Panzer, 1805: 19). 48 Available, invalid: obsolete combination/rank [*Dialineura sordida* (Panzer, 1805: 19). [21 Available, invalid: junior subjective synonym. *Dialineura anilis* (Linnaeus, 1760: 442)]]]. *Dialineura anilis* (Linnaeus, 1760: 442). 100446 Therevidae.
- speculiferum* Enderlein, 1934: 139 (*Reinigiellum*). PA 48 Available, invalid: obsolete combination/rank. *Thereva speculiferum* (Enderlein, 1934: 139). 100074 Therevidae.
- spiloptera* Wiedemann, 1824: 20 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva spiloptera* Wiedemann, 1824: 20. 100322 Therevidae.
- spinulosa* Loew, 1847: 20 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva spinulosa* Loew, 1847: 20. 100446 Therevidae.
- stigmatica* Kröber, 1912: 409 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva stigmatica* Kröber, 1912: 409. 100322 Therevidae. [After proposing it at the rank of species, Kröber (1925: 53, 1937: 285) later treated *Thereva stigmatica* as a variety of *Thereva tuberculata* Loew, 1847: 13].
- striata* Kröber, 1913: 25 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva bicinctella* Costa, 1883: 104. 100322 Therevidae.
- striatifrons* Kröber, 1913: 263 (*Thereva*). AF 21 Available, invalid: junior subjective synonym. *Thereva seminitida seminitida* Becker, 1909: 115. 100098 Therevidae.
- strigata* Fabricius, 1794: 255 (*Bibio*). PA 48 Available, invalid: obsolete combination/rank. *Thereva strigata* (Fabricius, 1794: 255). 100016 Therevidae. [Meigen (1820: 117) considered *strigata* to be the male of *plebeja* Linnaeus and treated the name as a junior subjective synonym].
- strigipes* Loew, 1869: 167 (*Thereua*). NE 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva strigipes* Loew, 1869: 169. 100450 Therevidae.
- subcoleoprata Fabricius, 1798: 560 (*Thereva*). PA 80 Unavailable: subsequent usage [*Syrphus subcoleopratus* Fabri-

- cius, 1775: 284. [70 Unavailable: misidentification. *Conops subcoleopratus* Linnaeus, 1767: 1006 [48 Available, invalid: obsolete combination/rank. *Phasia subcoleoprata* (Linnaeus, 1767: 1006)]]]. *Phasia hemiptera* (Fabricius, 1794: 284). 100673 Tachinidae.
- subfasciata* Schummel, 1839: 58 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva cinifera* Meigen, 1830: 322. 100075 Therevidae. [Kröber (1912: 691, 1913: 61, 1925: 51, 1937: 284) treated *Thereva subfasciata* Schummel, 1839: 58 [cited by Kröber as Schummel 1830: 58], as the valid name for *Thereva cinifera* Meigen, 1830: 322. Lyneborg & Spitzer (1975: 22) correctly treated *Thereva fulva* Meigen, 1830, as the valid name].
- subfulva* Kröber, 1912: 683 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva subfulva* Kröber, 1912: 683. 100322 Therevidae.
- subnitida* Kröber, 1913: 162 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva subnitida* Kröber, 1913: 162. 100322 Therevidae.
- subtilis* Loew, 1847: 12 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva subtilis* Loew, 1847: 12. [21 Available, invalid: junior subjective synonym. *Thereva tuberculata* Loew, 1847: 13]]. *Thereva tuberculata* Loew, 1847: 13. 100446 Therevidae.
- suifenensis* Ôuchi, 1943: 484 (*Therva*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva suifenensis* Ôuchi, 1943: 484. 100322 Therevidae. [Ôuchi (1943: 484) proposed *suifenensis* in the genus *Thereva*, subgenus *Athereva*, as "*Therva* (*Athereva*) [sic] *suifenensis*, sp. nov."
- superba* Egger, 1859: 402 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva microcephala* Loew, 1847: 40. 100075 Therevidae.
- sybarita* Loew, 1873: 144 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. [*Thereva sybarita* Loew, 1873: 144 [48 Available, invalid: obsolete combination/rank. *Acrosathe sybarita* (Loew, 1873: 144)]]]. *Acrosathe sybarita* (Loew, 1873: 144). 100322 Therevidae.
- taeniata* Panzer, 1804: 138 (*Thereva*). *Patria ignota* 21 Available, invalid: junior subjective synonym [*Ectophasia taeniata* Panzer, 1804: 138. [21 Available, invalid: junior subjective synonym. *Ectophasia crassipennis* (Fabricius, 1794: 284)]]]. *Ectophasia crassipennis* (Fabricius, 1794: 284). 100673 Tachinidae.
- taeniata* Meigen, 1820: 120 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva cincta* Meigen, 1820: 117. 100322 Therevidae. [The second edition of Meigen's 1820 work presents a subsequent usage of this name: *Thereva taeniata* Meigen, 1851: 91. *Thereva taeniata* Meigen, 1820: 120, was treated by authors as a junior synonym of *Thereva arcuata* Loew, 1847: 9, after Bezzi (1903: 208), until both of these names were synonymized with *Thereva cincta* Meigen, 1820: 117, by Lyneborg (1989: 27)].
- tenuitarsum* Sherborn, 1933: 1027 (*Thereva*). NOT APPLICABLE 55 Unavailable: *nomen nudum*. NEW. [This combination resulted from a bookkeeping error in Sherborn's "Index to Trivalia under Genera (Prionopus - Zyxomma; addenda acetocae - voltzi)" under *Thereva*. Of the two entries for the species-group name "*tenuitarsum*" in the alphabetic index (see Sherborn 1922–1932), the confusion is probably linked to *Therion tenuitarsum* Curtis, 1839: 736 (Hymenoptera)].
- tergis* Kröber, 1912: 231 (*Thereva*). NE 60 Unavailable: misspelling [*Thereva tergisa* Say, 1823: 39. [48 Available, invalid: obsolete combination/rank. *Litolinga tergisa* (Say, 1823: 39)]]]. *Litolinga tergisa* (Say, 1823: 39). NEW Therevidae. [This misspelling by Kröber (1912: 231, 1913: 34) probably reflects the orthography for *Thereva tergisa* Say, 1823: 39, found in LeConte's (1859: 57) reproduction of Say's works: "*Thereva tergisa*"]].
- tergisa* Say, 1823: 39 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Litolinga tergisa* (Say, 1823: 39). 100130 Therevidae.
- tergissa* Wiedemann, 1828: 233 (*Thereva*). NE 60 Unavailable: misspelling [*Thereva tergisa* Say, 1823: 39. [48 Available, invalid: obsolete combination/rank. *Litolinga tergisa* (Say, 1823: 39)]]]. *Litolinga tergisa* (Say, 1823: 39). 100130 Therevidae. [Le Conte (1859: 813) used the spelling "*tergissa*" in the taxonomic index for the compilation of Say's writings, and Irwin & Lyneborg (1981: 236) stated that this spelling by Le Conte is an [unnecessary] emendation].
- teydea* Frey, 1936: 53 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva teydea* Frey, 1936: 53. 100322 Therevidae.
- teydea intermedia* Báez, 1982: 89 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva teydea intermedia* Báez, 1982: 89. 100322 Therevidae.
- teydea orientalis* Báez, 1982: 89 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva teydea orientalis* Báez, 1982: 89. 100322 Therevidae.
- teydea teydea* Frey, 1936: 53 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva teydea teydea* Frey, 1936: 53. 100322 Therevidae.
- thermophila* Trojan, 1970: 283 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva strigata* (Fabricius, 1794: 255). 100075 Therevidae.

- thoracica** Macquart, 1840: 22 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Ruppellia thoracica* (Macquart, 1840: 22). 100461 Therevidae. [The separate of this article (Macquart 1841) presents a subsequent usage of this name: *Thereva thoracica* Macquart, 1841: 300].
- tibialis** Meigen, 1820: 119 (*Thereva*). PA 58 Unavailable: published in synonymy, not subsequently validated [*Thereva lugubris* (Fabricius, 1787: 328). [21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103)]]]. *Thereva unica* (Harris, 1779: 103). 100105 Therevidae. [The Megerle auction catalogs, to which Meigen (1820: 119) attributed his subsequent use of "*Bibio tibialis*," were suppressed from nomenclature by ICZN Opinion 1710 (ICZN 1993). Bezzi (1909: 209) listed "*tibialis* Meg. in apud Meig." as a junior synonym of *Thereva lugubris* (Fabricius, 1794: 255). Kertész (1909: 158) and Kröber (1937: 283) listed "*tibialis* Meg. in apud Meig." as a junior synonym of *Thereva plebeja* (Linnaeus, 1758: 589)].
- tuberculata** Becker, 1922: 23 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva tuberculata* Loew, 1847: 13]. *Thereva tuberculata* Loew, 1847: 13. NEW Therevidae.
- tomentosa** Kröber, 1913: 25 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva tomentosa* Kröber, 1913: 25. 100322 Therevidae.
- tricolor** Walker, 1848: 225 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus tricolor* (Walker, 1848: 225). 100076 Therevidae.
- tristis** Loew, 1847: 12 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva tristis* Loew, 1847: 12. 100136 Therevidae.
- tuberculata** Loew, 1847: 13 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva tuberculata* Loew, 1847: 13. 100136 Therevidae.
- tuberculate** Steskal & El Bialy, 1967: 54 (*Thereva*). PA 60 Unavailable: misspelling [*Thereva tuberculata* Loew, 1847: 13]. *Thereva tuberculata* Loew, 1847: 13. NEW Therevidae.
- tuberculifrons** Kröber, 1913: 264 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva tuberculifrons* Kröber, 1913: 264. 100463 Therevidae.
- turneri** Lyneborg, 1976: 317 (*Thereva*). AF 10 Available, valid: [no change]. *Thereva turneri* Lyneborg, 1976: 317. 100463 Therevidae.
- unicolor** Kröber, 1913: 23 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva unicolor* Kröber, 1913: 23. 100322 Therevidae.
- unicus** Harris, 1779: 103 (*Sylvicola*). PA 48 Available, invalid: obsolete combination/rank. *Thereva unica* (Harris, 1779: 103). 100136 Therevidae.
- unifasciata** Kröber, 1913: 62 (*Thereva*). AF 48 Available, invalid: obsolete combination/rank. *Pseudothereva unifasciata* (Kröber, 1913: 62). 100098 Therevidae.
- ursina** Wahlberg, 1854: 214 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva valida* Loew, 1847: 39. 100075 Therevidae.
- ustulata** Kröber, 1912: 265 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva ustulata* Kröber, 1912: 265. 100130 Therevidae.
- utahensis** Hardy, 1938: 145 (*Thereva*). NE 10 Available, valid: [no change]. *Thereva utahensis* Hardy, 1938: 145. 100130 Therevidae.
- valida** Loew, 1847: 39 (*Thereua*). PA 49 Available, invalid: incorrect spelling of genus-group name in original combination. *Thereva valida* Loew, 1847: 39. 100696 Therevidae.
- valida** Schiner, 1860: 163 (*Thereva*). PA 70 Unavailable: misidentification [*Thereva valida* Loew, 1847: 39]. *Thereva brevicornis* Loew, 1847: 41. 100696 Therevidae. [Schiner (1860: 163) explained in a footnote that he had specimens of *Thereva alpina* Egger, 1859 in his collection labelled as *Thereva valida* Loew. Bezzi (1903: 207) and Kertész (1909: 150) listed *Thereva valida* Schiner, 1860: 163, as a junior synonym of *Thereva alpina* Egger, 1859. Kröber (1913: 55, 1937: 279 [as "*valida* Schumm.")]) listed *Thereva valida* Schiner, 1860, with *Thereva alpina* Egger, 1859, as a junior synonym of *Thereva brevicornis* Loew, 1847: 41].
- vanduzeei** Cole, 1923: 105 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Acrosathe vanduzeei* (Cole, 1923: 105). 100130 Therevidae.
- varia** Walker, 1848: 221 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Tabuda varia* (Walker, 1848: 221). 100130 Therevidae.
- variabilis** Macquart, 1846: 230 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Ectinorhynchus variabilis* (Macquart, 1846: 230). 100136 Therevidae. [The separate of this article (Macquart 1846b) presents a subsequent usage of this name: *Thereva variabilis* Macquart, 1846: 102].
- varians** Walker, 1852: 161 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus varians* (Walker, 1852: 161). 100076 Therevidae.
- varicincta** Bigot, 1860: 222 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarhynchus varicinctus* (Bigot, 1860: 222). 100076 Therevidae.

- varipes** Macquart, 1847: 49 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Anabarthynchus varipes* (Macquart, 1847: 49). 100076 Therevidae.
- venosa** Kröber, 1913: 62 (*Thereva*). PA 10 Available, valid: [no change]. *Thereva venosa* Kröber, 1913: 62. 100322 Therevidae.
- venusta** Erichson, 1842: 272 (*Thereva*). AU 48 Available, invalid: obsolete combination/rank. *Ectinorhynchus venusta* (Erichson, 1842: 272). 100076 Therevidae.
- vetula** Zetterstedt, 1838: 523 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva lanata* Zetterstedt, 1838: 523. 100136 Therevidae.
- vialis** Osten Sacken, 1877: 274 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Acrosathe vialis* (Osten Sacken, 1877: 274). 100130 Therevidae.
- vicina** Walker, 1848: 222 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Psilocephala vicina* (Walker, 1848: 222). 100038 Therevidae.
- vittata** Loew, 1840: 528 (*Thereva*). PA 55 Unavailable: *nomen nudum*. NEW Therevidae. [Loew (1840: 528) proposed *Thereva dispar* Loew, 1840: 528, as a replacement name using the following statements: "Ich habe von *Thereva lugubris* Meig. so oft nur das Männchen und von *Thereva taeniata* Meig. nur das Weibchen gefangen, das ich beide unbedenklich als die Geschlechter einer Spezies vereinigen muß. Zwar ist bei der auch in der Dunkelheit der Behaarung, wie in der Farbe der Einschnitte recht merklich veränderlichen *lugubris* das Flügelmal dunkler als bei *taeniata*, und die Flügel überhaupt nicht selten mehr gebräunt, doch zeigt schon die große Veränderlichkeit dieser Färbungen, wie wenig sie etwas gegen obige Ansicht entscheiden können. Beide Namen, *lugubris* wie *vittata*, werden durch die Vereinigung beider Geschlechter unpassend. Ich schlage dafür *Thereva dispar* vor." Loew's use of the name "*vittata*" in the last sentence is likely an error in the manuscript for "*lugubris*," and *Thereva vittata* Loew, 1840: 528, is a *nomen nudum*].
- vittata** Philippi, 1865: 769 (*Thereva*). NT 48 Available, invalid: obsolete combination/rank. *Peralia vittata* (Philippi, 1865: 769). 100464 Therevidae.
- vittigera** Wiedemann, 1828: 558 (*Thereva*). OR 48 Available, invalid: obsolete combination/rank. *Irwiniella vittigera* (Wiedemann, 1828: 558). 100463 Therevidae.
- vulpina** Kröber, 1912: 696 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva unica* (Harris, 1779: 103). 100322 Therevidae.
- willistoni** Cole, 1965: 352 (*Thereva*). NE 27 Available, invalid: unjustified new name [*Thereva crassicornis* Williston, 1886: 293. [34 Available, invalid: junior homonym, primary. *Thereva crassicornis* Bellardi, 1861: 88. [48 Available, invalid: obsolete combination/rank. *Ozodiceromyia crassicornis* (Bellardi, 1861: 88)]]]. *Pallicephala pachyceras* (Williston, 1908: 206) [Senior objective synonym for *Thereva willistoni* Cole, 1965: 352]. NEW Therevidae. [Irwin & Lyneborg (1981a: 208) and Webb & Irwin (1991a: 893) treated *Thereva willistoni* Cole, 1965: 352, as a justified new (replacement) name for *Thereva crassicornis* Williston, 1886: 293, although Williston (1908: 206) proposed a replacement name, *Thereva pachyceras*, prior to Cole (1965: 352).
- xanthobasis** James, 1949: 12 (*Thereva*). NE 48 Available, invalid: obsolete combination/rank. *Ozodiceromyia xanthobasis* (James, 1949: 12). 100130 Therevidae.
- xestomyzina** Strobl in Czerny & Strobl, 1909: 168 (*Thereva*). PA 48 Available, invalid: obsolete combination/rank. *Salentia xestomyzina* (Strobl in Czerny & Strobl, 1909: 168). 100632 Therevidae.
- zonata** Kröber, 1912: 682 (*Thereva*). PA 21 Available, invalid: junior subjective synonym. *Thereva handlirschi* Kröber, 1912: 696. 100322 Therevidae.

APPENDIX II: TAXONOMIC INDEX<sup>1</sup>A. DISTRIBUTION OF *THEREVA* SPECIES-GROUP NAMES BY CURRENT GENERIC PLACEMENT

- Acrosathe** Irwin & Lyneborg, 1981: 223. (Therevidae)  
*anilis* Fabricius 1775, *anilis* Fabricius 1781, *anilis* Meigen 1804, *anilis* Schrank 1803, *annulata* Fabricius 1805, *annulata* Fallén 1814, *annulata* Jaennicke 1867, *bimaculata* Cole 1923, *novella* Coquillett 1893, *otiosa* Coquillett 1893, *pacifica* Cole 1923, *sybarita* Loew 1873, *vanduzeei* Cole 1923, *vialis* Osten Sacken 1877.
- Actorthia** Kröber, 1912: 3. (Therevidae)  
*lacteipennis* Becker 1913, *olivierii* Macquart 1840.
- Ammonaios** Irwin & Lyneborg, 1981: 240. (Therevidae)  
*nivea* Kröber 1914.
- Ammothereva** Lyneborg, 1984: 206. (Therevidae)  
*hebes* Loew 1869, *laticornis* Loew 1856, *nivea* Kröber 1914, *poecilopa* Loew 1871.
- Anabarhynchus** Macquart, 1848: 231. (Therevidae)  
*aperta* Macquart 1846, *apicalis* Walker 1852, *concolor* Walker 1848, *conformis* Walker 1848, *dimidiata* Macquart 1847, *hebes* Walker 1852, *hyalipennis* Macquart 1846, *inconspicua* Walker 1852, *innotata* Walker 1856, *lateralis* Walker 1852, *misella* Walker 1835, *nudifemorata* Macquart 1846, *ochropa* Thomson 1869, *quinque vittata* Macquart 1847, *quinque-vittata* Macquart 1847, *schineri* Jaennicke 1867, *tricolor* Walker 1848, *varians* Walker 1852, *varicincta* Bigot 1860, *varipes* Macquart 1847.
- Arenigena** Irwin & Lyneborg, 1981: 238. (Therevidae)  
*semitaria* Coquillett 1893.
- Aristothereva** Frey, 1921: 82. (Therevidae)  
*albipes* Eversmann 1834.
- Brachylinga** Irwin & Lyneborg 1981: 232. (Therevidae)  
*appendiculata* Macquart 1840.
- Catharosia** Rondani, 1868: 46. (Tachinidae)  
*nana* Fallén 1815, *pygmaea* Fallén 1815.
- Clorismia** Enderlein, 1927: 109. (Therevidae)  
*ardea* Fabricius 1794, *ardea* Meigen 1820, *confinis* Fallen 1815, *ruficaudis* Wiedemann 1820, *rustica* Fallén 1814, *rustica* Panzer 1804, *rusticus* Becker 1902.
- Cyclotelus** Walker, 1850: 4. (Therevidae)  
*diversipes* Kröber 1911, *pictipennis* Wiedemann 1821, *scutellaris* Walker 1857.
- Dialineura** Rondani, 1856: 155. (Therevidae)  
*anilis* Latreille 1809, *anilis* Linnaeus 1760, *anilis* Wiedemann 1838, *albicans* Macquart 1834, *rufipes* Macquart 1834, *flavipes* Fabricius 1794, *sordida* Panzer 1805.
- Dichoglena** Irwin & Lyneborg, 1981: 210. (Therevidae)  
*borealis* Cole 1923, *lapponica* Zetterstedt 1838, *nigripennis* Ruthe 1831.
- Ectinorhynchus** Macquart, 1850: 407. (Therevidae)  
*variabilis* Macquart 1846, *venusta* Erichson 1842.
- Ectophasia** Townsend, 1912: 46. (Tachinidae)  
*analis* Fabricius 1798, *taeniata* Panzer 1804, *crasipennis* Fabricius 1794.
- Euphycus** Kröber, 1912: 7. (Therevidae)  
*dispar* Wiedemann 1820.
- Eupsilocephala** Kröber, 1912: 119. (Therevidae)  
*singula* Walker 1848.
- Glaesorthactia** Hennig, 1967: 3. (Therevidae [monotypic genus for fossil taxon])  
*magnicornis* Meunier 1908
- Hermannula** Strand, 1932: 195. (Therevidae)  
*alaimontana* Kröber 1925, *lanata* Kröber 1912.
- Hoplosathe** Lyneborg & Zaitzev, 1980: 81. (Therevidae)  
*frauenfeldi* Loew 1856.
- Irwiniella** Lyneborg, 1976: 251. (Therevidae)  
*annulata* Macquart 1839, *congrua* Walker 1858, *con-*

<sup>1</sup> Genus names in bold (e.g., **bold**) are available and valid, in italics (e.g., *italics*) are available and invalid, and in normal type (e.g., normal) are unavailable.

scita Walker 1861, frontata Becker 1908, nana Wolaston 1858, nuba Wiedemann 1828, purpurariae Frey 1958.

**Litolinga** Irwin & Lyneborg, 1981: 234. (Therevidae)

corrusca Le Conte 1859, corusca Wiedemann 1828, tergisa Say 1823, tergissa Wiedemann 1824.

**Litophasia** Girschner, 1887: 380. (Tachinidae)  
hyalipennis Fallén 1815

**Megathereva** Lyneborg, 1992: 66. (Therevidae)  
bilineata Fabricius 1775, bilineata Fabricius 1794.

**Melanothereva** Malloch, 1932: 249. (Therevidae)  
lugubris Macquart 1840, morio Rondani 1863.

**Myolepta** Newmann, 1838: 373. (Syrphidae)  
dubia Fabricius 1805.

**Neotherevella** Lyneborg, 1978: 75. (Therevidae)  
citrina Becker 1902, macularis Wiedemann 1828.

**Ozodiceromyia** Bigot, 1889: 321. (Therevidae)  
anomala Adams 1904, argentata Bellardi 1861, californica Kröber 1912, crassicornis Bellardi 1861, germana Walker 1848, haemorrhoidalis Aldrich 1858, hoemorrhoidalis Macquart 1840, melanoneura Loew 1872, metallica Kröber 1914, nana Cole 1959, nanella Cole 1960, nigra Say 1823, notata Wiedemann 1821, pygmaea Cole 1923, ruficornis Macquart 1840, xanthobasis James 1949.

**Pachygenia** Kröber, 1912: 19. (Therevidae)  
anthracina Loew 1858.

**Pallicephala** Irwin & Lyneborg, 1981: 206. (Therevidae)  
crassicornis Williston 1886, pachyceras Williston 1908, willistoni Cole 1965.

**Pandivirilia** Irwin & Lyneborg, 1981: 212. (Therevidae)  
caesia Meigen 1835, eximia Meigen 1820, fuscipennis Meigen 1820, melaleuca Loew 1847.

**Penniverpa** Irwin & Lyneborg, 1981: 227. (Therevidae)  
senilis Fabricius 1805, senilis Wiedemann 1821.

**Peralia** Malloch, 1932: 240. (Therevidae)  
vittata Philippi 1865.

**Phasia (Phasia)** Latreille, 1804: 195 (Tachinidae)  
affinis Fabricius 1794, affinis Fabricius 1798, cinerea Fabricius 1805, hemipterus Fabricius 1794, muscaria Fallén 1815, obesa Fabricius 1798, subcoleoptratus Fabricius 1775.

**Platycarenum** Kröber, 1912: 119. (Therevidae)  
arida Walker 1857.

**Pseudothereva** Lyneborg, 1976: 295. (Therevidae)  
aethiopica Bezzi 1906, nitdiventris Kröber 1939, unifasciata Kröber 1913.

**Psilocephala** Zetterstedt, 1838: 525. (Therevidae)  
abdominalis Fabricius 1805, albina Wiedemann 1817, conspicua Walker 1848, cylindrica Walker 1848, fascipennis Macquart 1846, imberbis Fallén 1814, lateralis Eschscholtz 1822, vicina Walker 1848, vittigera Wiedemann 1828.

**Ruppellia** Wiedemann, 1830: 625. (Therevidae)  
nuda Loew 1856, thoracica Macquart 1840.

**Salentia** A. Costa, 1857: 446. (Therevidae)  
xestomyzina Strobl in Czerny & Strobl 1909.

**Spiriverpa** Irwin & Lyneborg, 1981: 214. (Therevidae)  
albiceps Loew 1869, albifrons Say 1829, bella Kröber 1914, bella nigrimana Kröber 1914, candidata Loew 1869, cinerascens Cole 1923, clausa Frey 1911, cockerelli Cole 1923, lunulata Zetterstedt 1838, maruyamana Matsumura 1916, nitoris Coquillett 1894, senex Walker 1848.

**Stenosathe** Lyneborg, 1976: 246. (Therevidae)  
brachycera Loew 1858.

**Stichopogon** Loew, 1847: 499. (Asilidae)  
inconstans Wiedemann 1828.

**Tabuda** Walker, 1852: 197. (Therevidae)  
fulvipes Walker 1852, nervosa Walker 1848, varia Walker 1848.

**Tabudamima** Irwin & Lyneborg, 1981: 219 (Therevidae)  
melanophleba Loew 1876.

**Thereva** Latreille 1796: 196. (Therevidae)  
affinis Kröber 1913, albibarba Kröber 1912, albilabris Meigen 1820, albipennis Meigen 1820, albipennis Zetterstedt 1842, albiventris Philippi 1865, albohirta Kröber 1912, albopilosa Kröber 1912, albiovittata Strobl 1909, algerica Kröber 1913, algerica Kröber

1913, alpina Egger 1859, amoena Kowarz 1883, analis Kröber 1912, angustifrons Kröber 1912, annulata Zetterstedt 1842, anthracoides Macquart 1840, apicalis Wiedemann 1821, arcuata Kröber 1912, arcuata Loew 1847, argentea Kröber 1912, argenteolana Frey 1921, asiatica Kröber 1913, athericiformis Kröber 1912, atistriata Kröber 1925, atra Kröber 1913, atripes Loew 1847, aurantiaca Becker 1913, aurata Loew 1854, aureomaculata Kröber 1912, aureoscutellata Kröber 1914, auricincta Egger 1859, aurofasciata Kröber 1912, bakeri Cole 1923, becquarti Kröber 1924, bequaerti Kröber 1914, bicinctella Costa 1883, bicolor Kröber 1912, bifasciata Kröber 1913, bilineata Brunetti 1917, binotata Loew 1847, bipunctata Loew 1847, bipunctata Meigen 1820, biroi Kröber 1913, bisignata Costa 1835, bi-signata Costa 1835, bivittata Loew 1840, bosniaskii Handlirsch 1907, brevicornis Loew 1847, brevipennis Loew 1840, brunettii Hollis 1964, brunnea Cole 1923, brunninervis Kröber 1913, caerulescens Panzer 1804, callosa Kröber 1912, canescens Kröber 1912, canescens Zetterstedt 1859, capensis Lyneborg 1976, carbonum Heyden 1856, caucasica Kröber 1913, chilensis Macquart 1840, chillaloensis Lyneborg 1976, chrysargyra Ségué 1953, cincta Meigen 1820, cingulata Kröber 1912, cinifera Meigen 1830, circumscripta Kröber 1913, circumscripta Loew 1847, claripennis Loew 1847, coleoptrata Latreille 1805, comata Loew 1869, concavifrons Kröber 1914, confusa Kröber 1913, congoensis Lyneborg 1976, conica Kröber 1913, corpulenta Kröber 1929, curta Kröber 1913, curticornis Kröber 1912, decipiens Kröber 1913, dejecta Walker 1852, didyma Loew 1847, discreta Becker 1922, dispar Loew 1840, diversa Coquillett 1894, duplicis Coquillett 1893, eggeri Lyneborg & Spitzer 1974, egressa Coquillett 1894, egressus Coquillett 1894, fasciatus De Geer 1776, femoralis Kröber 1914, fenestrata Kröber 1913, flavescens Loew 1847, flavicauda Coquillett 1904, flavicincta Loew 1869, flavicornis Kröber 1912, flavilabris Meigen 1820, flavipennis Kröber 1913, flavipes De Geer 1776, flavipilosa Cole 1923, flaviventris Kröber 1912, flavohirta Kröber 1914, flavolineata Brunetti 1912, flavopilosa Kröber 1914, foxi Cole 1923, frauenfeldii Loew 1856, freidbergi Lyneborg 1976, frontalis Say 1824, frontalis Schummel 1839, frontata Kröber 1912, frontosa Kröber 1912, fucata Loew 1872, fucatoides Bromley 1937, fulva Meigen 1804, fulvibarba Kröber 1912, fulvicornis Kröber 1924, fulvipennis Kröber 1912, funebris Meigen 1820, funebris Walker 1865, fuscinervis Zetterstedt 1838, gilvipes Loew 1869, glabra Báez 1982, glabra Kröber 1928, glauca Kröber 1913, glaucescens Kröber 1912, globulicornis Lyneborg 1976, gomerae Báez 1982, graeca Kröber 1912, grancanariensis Báez 1982, grisea Kröber 1913, grisescens Becker 1922, gruenbergi Kröber 1912, grünbergi Kröber 1912, hand-

lirschi Kröber 1912, helvetica Kröber 1937, hermanni Kröber 1912, hermaphrodita Becker 1922, hilarimorpha Kröber 1912, hinu Hollis 1964, hirta Kröber 1913, hirticeps Loew 1874, hirtus De Geer 1776, hispanica Strobl 1909, hyalina Kröber 1913, indica Walker 1852, innotata Kröber 1912, inornata Verrall 1909, insularis Becker 1922, intermedia Kröber 1913, intersectus Geoffroy in Fourcroy 1784, invaria Brunetti 1920, ishikariana Matsumura 1916, ishikariana Nagatomi & Lyneborg 1989, isshikariana Kröber 1937, johnsoni Coquillett 1893, kempi Brunetti 1920, lanata Zetterstedt 1838, latifrons Macquart 1848, latistriata Kröber 1913, laufferi Strobl 1909, lichtwardti Kröber 1913, lugens Loew 1847, lugubris Fabricius 1787, lugubris Gmelin 1790, lugubris Meigen 1804, luteiventris Philippi 1865, lutescens Loew 1869, macdunnoughi Cole 1925, macedonica Kröber 1937, maculicornis Jaennicke 1867, maculipennis Kröber 1911, maculipennis Kröber 1912, major Matsumura 1905, manchoulensis Ôuchi 1943, marcelini Théobald 1937, marginata Fabricius 1781, marginata Meigen 1820, marginula Meigen 1820, marmorata Kröber 1912, maruyama Kröber 1937, mettallica Kröber 1914, microcephala Loew 1847, mirabilis Lyneborg 1987, modesta Becker 1922, monos Harris 1779, monticola Becker 1922, natalensis Lyneborg 1976, nebulosa Kröber 1912, neglecta Kröber 1912, neomexicana Cole 1923, nervosa Loew 1847, nigella Wiedemann 1828, nigrifrons Kröber 1913, nigripes Loew 1847, nigripilosa Cole 1923, nitida Macquart 1834, nitidifrons Kröber 1913, nivaria Walker 1852, niveifacies Kröber 1912, niveipennis Kröber 1914, nobilis Gmelin 1790, nobilitata Fabricius 1775, nobilitata Loew 1840, notabilis Macquart 1840, nova Kröber 1913, obscuripes Kröber 1913, oblecta Loew 1847, occulta Becker 1908, oculata Egger 1859, olivieri Becker 1902, opaca Kröber 1913, orbudadica Paramonov 1927, ornata Kröber 1912, palpis Loew 1869, panotshinii Paramonov 1927, penguin Loew 1850, persequa Walker 1852, phaeoptera Costa 1883, pilifrons Kröber 1912, pilipes Fabricius 1805, plabeja Latreille 1805, plagiata Walker 1848, plebeia Latreille 1805, plebeius Schrank 1803, plebeja Linnaeus 1758, plebeja Macquart 1839, poeciloptera Loew 1847, porrectifrons Kröber 1937, powelli Ségué 1930, praecedens Walker 1857, praecox Egger 1859, praestans Collin 1948, pseudoculata Cole 1923, punctipennis Wiedemann 1821, quiniquicellata Macquart 1847, reclusa Lyneborg 1976, rhomboidalis Kröber 1912, robusta Kröber 1912, rodanii Kröber 1925, rondanii Jaennicke 1867, rossica Becker 1922, rubicunda Panzer 1804, ruficandis Loew 1847, ruficornis Gimmerthal 1847, rufipes Meigen 1804, rufiventris Kröber 1912, rustica Fallén 1814, rustica Loew 1840, satanas Kröber 1912, segmentata Speiser 1910, seminitida Becker 1909, seminitida occidentalis Lyneborg 1976, seminitida seminitida Becker

1909, seminitida stuckenbergi Lyneborg 1976, semirufa Kröber 1912, sequa Walker 1852, sequens Walker 1852, simulata Malloch 1932, sobrina Kröber 1912, speculiferum Enderlein 1934, spiloptera Wiedemann 1824, spinulosa Loew 1847, stigmatica Kröber 1912, striata Kröber 1913, striatifrons Kröber 1913, strigata Fabricius 1794, strigipes Loew 1869, subfasciata Schummel 1839, subfulva Kröber 1912, subnitida Kröber 1913, subtilis Loew 1847, suifenensis Ôuchi 1943, superba Egger 1859, taeniata Meigen 1820, teydea Frey 1936, teydea intermediata Báez 1982, teydea orientalis Báez 1982, teydea teydea Frey 1936, thermophila Trojan 1970, tibialis Meigen 1820, tuberculata Becker 1922, tomentosa Kröber 1913, tristis Loew 1847, tuberculata Loew 1847, tuberculata Steskal & El Bialy 1967, tuberculifrons Kröber 1913, turneri Lyneborg 1976, unicolor Kröber 1913, unicus Harris 1779, ursina Wahlberg 1854, ustulata Kröber 1912, utahensis Hardy 1938, valida Loew 1847, venosa Kröber 1914, vetula Zetterstedt 1838, vulpina Kröber 1912, zonata Kröber 1912.

**Trichopoda (Trichopoda)** Berthold, 1827: 508 (Tachinidae)  
plumipes Fabricius 1805.

**Trichopoda (Galactomyia)** Berthold, 1827: 508 (Tachinidae)  
hirtipes Fabricius 1805, lanipes Fabricius 1805, pennipes Fabricius 1805.

**Xestomyzina** Kröber, 1912: 10. (Therevidae)  
melanostoma Loew 1856.

**Xysta** Meigen, 1824: 181. (Tachinidae)  
holoserica Fabricius 1805.

**Unplaced species of Rhagionidae**  
apicalis Bertoloni 1861

**Nomina nuda**  
albipes Eversmann 1834, aurata Harris 1835, bosniaskii Handlirsch 1907, brevipennis Loew 1840, carbonum Meyer 1851, flavicornis Eversmann 1834, grisea Eversmann 1834, niveipennis Eversmann 1834, plagiata Harris 1835, porcellus Sherborn 1933, tenuitarsus Sherborn 1933, vittata Loew 1840.

## B. DISTRIBUTION OF *THEREVA* SPECIES-GROUP NAMES BY ORIGINAL GENERIC PLACEMENT

**Bibio** Geoffroy, 1762: 568 (Bibionidae)  
abdominalis Fabricius 1805, anilis Fabricius 1775, anilis Fabricius 1781, anilis Meigen 1804, anilis Schrank 1803, annulata Fabricius 1805, annulata Fallén 1814, bilineata Fabricius 1775, confinis Fallén 1814, fasciata Meigen 1804, flavipes Fabricius 1794, fulva Meigen 1804, imberbis Fallén 1814, lugubris Fabricius 1787, lugubris Meigen 1804, marginata Fabricius 1781, nobilitata Fabricius 1775, plebeius Schrank 1803, rufipes Meigen 1804, rustica Fallén 1814, rustica Panzer 1804, senilis Fabricius 1805, sordida Panzer 1805, strigata Fabricius 1794.

**Caenozona** Kröber, 1912: 251. (Therevidae)  
arcuata Kröber 1912, bicolor Kröber 1912.

**Exapata** Macquart, 1840: 26. (Therevidae)  
anthracoides Macquart 1840

**Hermannia** Kröber, 1912: 25. (Therevidae)  
lanata Kröber 1912.

**Leptis** Fabricius, 1805: 69 (Rhagionidae)  
flavipes Fallén 1814.

**Musca** Linnaeus, 1758: 589. (Muscidae)  
anilis Linnaeus 1760, lugubris Gmelin 1790, nobilis Gmelin 1790, plebeja Linnaeus 1758.

**Mydas** Fabricius, 1794: 252. (Mydidae)  
bilineata Fabricius 1794.

**Nemotelus** Geoffroy, 1762: 542. (Stratiomyidae)  
fasciatus De Geer 1776, flavipes De Geer 1776, hirtus De Geer 1776.

**Reinigiellum** Enderlein, 1934: 139. (Therevidae)  
speculiferum Enderlein 1934.

**Rhagio** Fabricius, 1775: 761. (Rhagionidae)  
ardea Fabricius 1794.

**Sylvicola** Harris, 1779: 100. (Anisipodidae)  
monos Harris 1779, unicus Harris 1779.

**Syrphus** Fabricius, 1775: 762. (Syrphidae)  
affinis Fabricius 1794, crassipennis Fabricius 1794, hemipterus Fabricius 1794, subcoleopratus Fabricius 1775.

**Tabanus** Linnaeus, 1758: 601. (Tabanidae)  
*intersectus* Geoffroy in Fourcroy 1784.

**Therena** Loew, 1854: 1. (Therevidae)  
*aurata* Loew 1854.

**Thereua** Agassiz, 1846: 39 (Therevidae)  
*albiceps* Loew 1869, *amoena* Kowarz 1883, *arcuata* Loew 1847, *atripes* Loew 1847, *binotata* Loew 1847, *bipunctata* Loew 1847, *brachycera* Loew 1858, *brevicornis* Loew 1847, *candidata* Loew 1869, *circumscripta* Loew 1847, *claripennis* Loew 1847, *comata* Loew 1869, *didyma* Loew 1847, *flavescens* Loew 1847, *flavicincta* Loew 1869, *frauenfeldi* Loew 1856, *frauenfeldii* Loew 1856, *fucata* Loew 1872, *gilvipes* Loew 1869, *hebes* Loew 1869, *hirticeps* Loew 1874, *laticornis* Loew 1856, *lugens* Loew 1847, *lutescens* Loew 1869, *melaleuca* Loew 1847, *melanoneura* Loew 1872, *melanophleba* Loew 1876, *melanostoma* Loew 1856, *microcephala* Loew 1847, *nervosa* Loew 1847, *nigripes* Loew 1847, *nuda* Loew 1856, *obtecta* Loew 1847, *pallipes* Loew 1869, *penguus* Loew 1850, *poecilopa* Loew 1871, *poeciloptera* Loew 1847, *ruficandis* Loew 1847, *spinulosa* Loew 1847, *strigipes* Loew 1869, *subtilis* Loew 1847, *sybarita* Loew 1873, *tristis* Loew 1847, *tuberculata* Loew 1847, *valida* Loew 1847.

**Thereva** Latreille, 1796: 167 (Therevidae)  
*aethiopica* Bezzi 1906, *affinis* Fabricius 1798, *affinis* Kröber 1913, *alaimontana* Kröber 1925, *albibarba* Kröber 1912, *albicans* Macquart 1834, *albifrons* Say 1829, *albilabris* Meigen 1820, *albina* Wiedemann 1819, *albipennis* Meigen 1820, *albipennis* Zetterstedt 1842, *albiventris* Philippi 1865, *albohirta* Kröber 1912, *albovillosa* Kröber 1912, *albovittata* Strobl 1909, *algerica* Kröber 1913, *algerica* Kröber 1913, *alpina* Egger 1859, *analisis* Fabricius 1798, *analisis* Kröber 1912, *angustifrons* Kröber 1912, *anilis* Latreille 1809, *anilis* Wiedemann 1838, *annulata* Macquart 1839, *annulata* Zetterstedt 1842, *annullata* Jaenicke 1867, *anomala* Adams 1904, *anthracina* Loew 1858, *aperta* Macquart 1846, *apicalis* Bertoloni 1861, *apicalis* Walker 1852, *apicalis* Wiedemann 1821, *appendiculata* Macquart 1840, *ardea* Meigen 1820, *argentata* Bellardi 1861, *argentea* Kröber 1912, *argenteolana* Frey 1921, *arida* Walker 1857, *asiatica* Kröber 1913, *athericiformis* Kröber 1912, *atistriata* Kröber 1925, *atra* Kröber 1913, *aurantiaca* Becker 1913, *aureomaculata* Kröber 1912, *aureoscutellata* Kröber 1914, *auricincta* Egger 1859, *aurofasciata* Kröber 1912, *bakeri* Cole 1923, *becquarti* Kröber 1924, *bella* Kröber 1914, *bella nigrimana* Kröber 1914, *bequaerti* Kröber 1914, *bicinctella* Costa 1883, *bifasciata* Kröber 1913, *bilineata* Brunetti 1917, *bi-*

*maculata* Cole 1923, *bipunctata* Meigen 1820, *biroi* Kröber 1913, *bisignata* Costa 1835, *bi-signata* Costa 1835, *bivittata* Loew 1840, *bolbocera* Osten Sacken 1887, *bolboceras* Aldrich 1904, *bosniaskii* Handlirsch 1907, *borealis* Cole 1923, *brevipennis* Loew 1840, *brunettii* Hollis 1964, *brunnea* Cole 1923, *brunninervis* Kröber 1913, *caerulescens* Panzer 1804, *caesia* Meigen 1835, *californica* Kröber 1912, *callosa* Kröber 1912, *canescens* Kröber 1912, *canescens* Zetterstedt 1859, *capensis* Lyneborg 1976, *caucasica* Kröber 1913, *chilensis* Macquart 1840, *chillaloensis* Lyneborg 1976, *chrysargyra* Ségué 1953, *cincta* Meigen 1820, *cinerascens* Cole 1923, *cinerea* Fabricius 1805, *cingulata* Kröber 1912, *cinifera* Meigen 1830, *circumscripta* Kröber 1913, *citrina* Becker 1902, *clausa* Frey 1911, *cockerelli* Cole 1923, *coleoprata* Latreille 1805, *concavifrons* Kröber 1914, *concolor* Walker 1848, *conformis* Walker 1848, *confusa* Kröber 1913, *congoensis* Lyneborg 1976, *congrua* Walker 1858, *conica* Kröber 1913, *conscita* Walker 1861, *conspicua* Walker 1848, *corpulenta* Kröber 1929, *corrusca* Le Conte 1859, *corusca* Wiedemann 1828, *crassicornis* Bellardi 1861, *crassicornis* Williston 1886, *curta* Kröber 1913, *curticornis* Kröber 1912, *cylindrica* Walker 1848, *decipiens* Kröber 1913, *dejecta* Walker 1852, *dimidiata* Macquart 1847, *discreta* Becker 1922, *dispar* Loew 1840, *dispar* Wiedemann 1820, *diversa* Coquillett 1894, *diversipes* Kröber 1911, *dubia* Fabricius 1805, *duplicis* Coquillett 1893, *eggeri* Lyneborg & Spitzer 1974, *egressa* Coquillett 1894, *egressus* Coquillett 1894, *eximia* Meigen 1820, *fascipennis* Macquart 1846, *femoralis* Kröber 1914, *fenestrata* Kröber 1913, *flavicauda* Coquillett 1904, *flavicornis* Kröber 1912, *flavilabris* Meigen 1820, *flavipennis* Kröber 1913, *flavipilosa* Cole 1923, *flaviventris* Kröber 1912, *flavohirta* Kröber 1914, *flavolineata* Brunetti 1912, *flavopilosa* Kröber 1914, *foxi* Cole 1923, *freidbergi* Lyneborg 1976, *frontalis* Say 1824, *frontalis* Schummel 1839, *frontata* Becker 1908, *frontosa* Kröber 1912, *fucatoides* Bromley 1937, *fulvibarba* Kröber 1912, *fulvicornis* Kröber 1924, *fulvipennis* Kröber 1912, *fulvipes* Walker 1852, *funebis* Meigen 1820, *funebis* Walker 1865, *fuscinervis* Zetterstedt 1838, *fuscipennis* Meigen 1820, *germana* Walker 1848, *glabra* Báez 1982, *glabra* Kröber 1928, *glauca* Kröber 1913, *glauescens* Kröber 1912, *globulicornis* Lyneborg 1976, *gomeræ* Báez 1982, *graeca* Kröber 1912, *grancanariensis* Báez 1982, *grisea* Kröber 1913, *grisescens* Becker 1922, *gruenbergi* Kröber 1912, *grünbergi* Kröber 1912, *haemorrhoidalis* Aldrich 1858, *handlirschi* Kröber 1912, *hebes* Walker 1852, *helvetica* Kröber 1937, *hermanni* Kröber 1912, *hilarimorpha* Kröber 1912, *hinu* Hollis 1964, *hirta* Kröber 1913, *hirtipes* Fabricius 1805, *hispanica* Strobl 1909, *hoemor-*

rhoidalis Macquart 1840, holoserica Fabricius 1805, hyalina Kröber 1913, hyalipennis Fallén 1815, hyalipennis Macquart 1846, inconspicua Walker 1852, inconstans Wiedemann 1830, indica Walker 1852, innotata Kröber 1912, innotata Walker 1856, inornata Verrall 1909, insularis Becker 1922, intermedia Kröber 1913, invaria Brunetti 1920, ishikariana Matsumura 1916, ishikarina Nagatomi & Lyneborg 1989, isshikariana Kröber 1937, johnsoni Coquillett 1893, kempi Brunetti 1920, lacteipennis Becker 1913, lanata Zetterstedt 1838, lanipes Fabricius 1805, lapponica Zetterstedt 1838, lateralis Eschscholtz 1822, lateralis Walker 1852, latifrons Macquart 1848, latistriata Kröber 1913, laufferi Strobl 1909, lichtwardti Kröber 1913, lugubris Macquart 1840, lunulata Zetterstedt 1838, luteiventris Philippi 1865, macdunnoughi Cole 1925, macedonica Kröber 1937, macularis Wiedemann 1828, maculicornis Jaennicke 1867, maculipennis Kröber 1911, maculipennis Kröber 1912, magnicornis Meunier 1908, major Matsumura 1905, marcelini Théobald 1937, marginata Meigen 1820, marginula Meigen 1820, marmorata Kröber 1912, maruyama Kröber 1937, maruyamana Matsumura 1916, metallica Kröber 1914, mettallica Kröber 1914, mirabilis Lyneborg 1987, misella Walker 1835, modesta Becker 1922, monticola Becker 1922, morio Rondani 1863, muscaria Fallén 1815, nana Cole 1959, nana Fallén 1815, nana Wollaston 1858, nanella Cole 1960, natalensis Lyneborg 1976, nebulosa Kröber 1912, neglecta Kröber 1912, neomexicana Cole 1923, nervosa Walker 1848, nigella Wiedemann 1828, nigra Say 1823, nigrifrons Kröber 1913, nigripennis Ruthe 1831, nigripilosa Cole 1923, nitida Macquart 1834, nitidifrons Kröber 1913, nitidiventris Kröber 1939, nitoris Coquillett 1894, nivaria Walker 1852, nivea Kröber 1914, niveifacies Kröber 1912, niveipennis Kröber 1914, nobilitata Loew 1840, notabilis Macquart 1840, notata Wiedemann 1821, nova Kröber 1913, novella Coquillett 1893, nuba Wiedemann 1828, nudifemorata Macquart 1846, obesa Fabricius 1798, obscuripes Kröber 1913, occulta Becker 1908, ochropa Thomson 1869, oculata Egger 1859, olivieri Becker 1902, olivierii Macquart 1840, opaca Kröber 1913, ordubadica Paramonov 1927, ornata Kröber 1912, otiosa Coquillett 1893, pachyceras Williston 1908, pacifica Cole 1923, panotshinii Paramonov 1927, pennipes Fabricius 1805, persequa Walker 1852, phaeoptera Costa 1883, pictipennis Wiedemann 1821, pilifrons Kröber 1912, pilipes Fabricius 1805, plabeja Latreille 1805, plebeia Latreille 1805, plebeja Macquart 1839, plumipes Fabricius 1805, porcellus Sherborn 1933, porrectifrons Kröber 1937, powelli Séguy 1930, praecedens Walker 1857, praecox Egger 1859, praestans Collin 1948, pseudoculata Cole 1923, punctipennis Wiedemann 1821, purpu-

rariae Frey 1958, pygmaea Cole 1923, pygmaea Fallén 1815, quinque vittata Macquart 1847, quinquevittata Macquart 1847, quinquevittata Macquart 1847, reclusa Lyneborg 1976, rhomboidalis Kröber 1912, robusta Kröber 1912, rodanii Kröber 1925, rondanii Jaennicke 1867, rossica Becker 1922, rubicunda Panzer 1804, ruficaudis Wiedemann 1820, ruficornis Macquart 1840, ruficornis Gimmerthal 1847, rufipes Macquart 1834, rufiventris Kröber 1912, rustica Loew 1840, rusticus Becker 1902, satanas Kröber 1912, schineri Jaennicke 1867, scutellaris Walker 1857, segmentata Speiser 1910, seminitida Becker 1909, seminitida occidentalis Lyneborg 1976, seminitida seminitida Becker 1909, seminitida stuckenbergi Lyneborg 1976, semirufa Kröber 1912, semitaria Coquillett 1893, senex Walker 1848, senilis Wiedemann 1821, sequa Walker 1852, sequens Walker 1852, simulata Malloch 1932, singula Walker 1848, sobrina Kröber 1912, spilopectera Wiedemann 1824, stigmatica Kröber 1912, striata Kröber 1913, striatifrons Kröber 1913, subcoleoptrata Fabricius 1798, subfasciata Schummel 1839, subfulva Kröber 1912, subnitida Kröber 1913, superba Egger 1859, taeniata Meigen 1820, taeniata Panzer 1804, tenuitarsum Sherborn 1933, tergisa Say 1823, tergissa Wiedemann 1824, teydea Frey 1936, teydea intermedia Báez 1982, teydea orientalis Báez 1982, teydea teydea Frey 1936, thermophila Trojan 1970, thoracica Macquart 1840, tibialis Meigen 1820, tnberculata Becker 1922, tomentosa Kröber 1913, tricolor Walker 1848, tuberculata Steskal & El Bialy 1967, tuberculifrons Kröber 1913, turneri Lyneborg 1976, unicolor Kröber 1913, unifasciata Kröber 1913, ursina Wahlberg 1854, ustulata Kröber 1912, utahensis Hardy 1938, vanduzeei Cole 1923, varia Walker 1848, variabilis Macquart 1846, varians Walker 1852, varicincta Bigot 1860, varipes Macquart 1847, venosa Kröber 1914, venusta Erichson 1842, vetula Zetterstedt 1838, vialis Osten Sacken 1877, vicina Walker 1848, vittata Philippi 1865, vittigera Wiedemann 1828, vulpina Kröber 1912, willistoni Cole 1965, xanthobasis James 1949, xestomyzina Strobl in Czerny & Strobl 1909, zonata Kröber 1912.

Therva Ôuchi, 1943: 483 (Therevidae)

manchoulensis Ôuchi 1943, suifenensis Ôuchi 1943.

#### *Nomina nuda*

albipes Eversmann 1834, aurata Harris 1835, bosniaskii Handlirsch 1907, brevipennis Loew 1840, carbonum Meyer 1851, flavicornis Eversmann 1834, grisea Eversmann 1834, niveipennis Eversmann 1834, plagiata Harris 1835, porcellus Sherborn 1933, tenuitarsum Sherborn 1933, vittata Loew 1840.

## APPENDIX III: BIOGEOGRAPHIC INDEX

## AFROTROPICAL REGION

aethiopica Bezzi 1906, analis Kröber 1912, anthracina Loew 1858, apicalis Bertoloni 1861, argentea Kröber 1912, becquarti Kröber 1924, brachycera Loew 1858, capensis Lyneborg 1976, chillaloensis Lyneborg 1976, congoensis Lyneborg 1976, curticornis Kröber 1912, globulicornis Lyneborg 1976, inconstans Wiedemann 1830, macularis Wiedemann 1828, natalensis Lyneborg 1976, nitidiventris Kröber 1939, nuba Wiedemann 1828, reclusa Lyneborg 1976, segmentata Speiser 1910, seminitida Becker 1909, seminitida occidentalis Lyneborg 1976, seminitida seminitida Becker 1909, seminitida stuckenbergi Lyneborg 1976, striatifrons Kröber 1913, tuberculifrons Kröber 1913, turneri Lyneborg 1976, unifasciata Kröber 1913.

## AUSTRALIAN AND OCEANIAN REGIONS

aperta Macquart 1846, apicalis Walker 1852, arida Walker 1857, bilineata Fabricius 1775, bilineata Fabricius 1794, concolor Walker 1848, conformis Walker 1848, congrua Walker 1858, conscita Walker 1861, dimidiata Macquart 1847, funebris Walker 1865, hebes Walker 1852, hyalipennis Macquart 1846, inconspicua Walker 1852, innotata Walker 1856, lateralis Walker 1852, misella Walker 1835, nudifemorata Macquart 1846, ochropa Thomson 1869, quinquevittata Macquart 1847, quinquevittata Macquart 1847, quinquicellata Macquart 1847, singula Walker 1848, tricolor Walker 1848, variabilis Macquart 1846, varians Walker 1852, varicincta Bigot 1860, varipes Macquart 1847, venusta Erichson 1842.

## NEARCTIC REGION

albiceps Loew 1869, albifrons Say 1829, albopilosa Kröber 1912, anomala Adams 1904, aurata Harris 1835, aurofasciata Kröber 1912, bakeri Cole 1923, bella Kröber 1914, bella nigrimana Kröber 1914, bimaculata Cole 1923, bolbocera Osten Sacken 1887, bolboceras Aldrich 1904, borealis Cole 1923, brunnea Cole 1923, californica Kröber 1912, candidata Loew 1869, cinerascens Cole 1923, cingulata Kröber 1912, cockerelli Cole 1923, comata Loew 1869, concavifrons Kröber 1914, conspicua Walker 1848, corrusca Le Conte 1859, corrusca Wiedemann 1828, crassicornis Bellardi 1861, crassicornis Williston 1886, diversa Coquillett 1894, duplicis Coquillett 1893, egressa Coquillett 1894, egressus Coquillett 1894, flavicauda Coquillett 1904, flavicincta Loew 1869, flavipilosa Cole 1923, flavohirta Kröber 1914, foxi Cole 1923, frontalis Say 1824, fucata Loew 1872, fucatoides Bromley 1937, fulvipes Walker 1852, ger-

mana Walker 1848, gilvipes Loew 1869, haemorrhoidalis Aldrich 1858, hirticeps Loew 1874, hirtipes Fabricius 1805, hoemorrhoidalis Macquart 1840, johnsoni Coquillett 1893, lanipes Fabricius 1805, macdunnoughi Cole 1925, melanoneura Loew 1872, melanophleba Loew 1876, metallica Kröber 1914, mettallica Kröber 1914, nana Cole 1959, nanella Cole 1960, nebulosa Kröber 1912, neomexicana Cole 1923, nervosa Walker 1848, nigra Say 1823, nigripilosa Cole 1923, nitoris Coquillett 1894, nivea Kröber 1914, niveipennis Kröber 1914, notata Wiedemann 1821, novella Coquillett 1893, otiosa Coquillett 1893, pachyceras Williston 1908, pacifica Cole 1923, pennipes Fabricius 1805, pictipennis Wiedemann 1821, plagiata Harris 1835, plagiata Walker 1848, plumipes Fabricius 1805, pseudoculata Cole 1923, pygmaea Cole 1923, ruficornis Macquart 1840, semitaria Coquillett 1893, senex Walker 1848, senilis Fabricius 1805, senilis Wiedemann 1821, strigipes Loew 1869, tergisa Say 1823, tergissa Wiedemann 1824, ustulata Kröber 1912, utahensis Hardy 1938, vanduzeei Cole 1923, varia Walker 1848, vialis Osten Sacken 1877, vicina Walker 1848, willistoni Cole 1965, xanthobasis James 1949.

## NEOTROPICAL REGION

albiventris Philippi 1865, appendiculata Macquart 1840, argentata Bellardi 1861, chilensis Macquart 1840, diversipes Kröber 1911, fascipennis Macquart 1846, lugubris Macquart 1840, luteiventris Philippi 1865, maculicornis Jaennicke 1867, maculipennis Kröber 1911, morio Rondani 1863, notabilis Macquart 1840, schineri Jaennicke 1867, scutellaris Walker 1857, simulata Malloch 1932, vittata Philippi 1865.

## ORIENTAL REGION

albina Wiedemann 1819, bilineata Brunetti 1917, brunettii Hollis 1964, cylindrica Walker 1848, flavolineata Brunetti 1912, hinu Hollis 1964, indica Walker 1852, invaria Brunetti 1920, kempi Brunetti 1920, lateralis Eschscholtz 1822, nigella Wiedemann 1828, nivaria Walker 1852, persequa Walker 1852, praecedens Walker 1857, sequa Walker 1852, sequens Walker 1852, vittigera Wiedemann 1828.

## PALAEARCTIC REGION

abdominalis Fabricius 1805, affinis Fabricius 1794, affinis Fabricius 1798, affinis Kröber 1913, alaimontana Kröber 1925, albibarba Kröber 1912, albicans Macquart 1834, albilabris Meigen 1820, albipennis Meigen 1820, albipennis Zetterstedt 1842, albipes Eversmann 1834, albohirta Kröber 1912, albovittata

Strobl 1909, *algerica* Kröber 1913, *algorica* Kröber 1913, *alpina* Egger 1859, *amoena* Kowarz 1883, *analis* Fabricius 1798, *angustifrons* Kröber 1912, *anilis* Fabricius 1775, *anilis* Fabricius 1781, *anilis* Latreille 1809, *anilis* Linnaeus 1760, *anilis* Meigen 1804, *anilis* Schrank 1803, *anilis* Wiedemann 1838, *annulata* Fabricius 1805, *annulata* Fallén 1814, *annulata* Macquart 1839, *annulata* Zetterstedt 1842, *annullata* Jaennicke 1867, *anthracoides* Macquart 1840, *apicalis* Wiedemann 1821, *arcuata* Kröber 1912, *arcuata* Loew 1847, *ardea* Fabricius 1794, *ardea* Meigen 1820, *argenteolanata* Frey 1921, *asiatica* Kröber 1913, *athericiformis* Kröber 1912, *atistriata* Kröber 1925, *atra* Kröber 1913, *atripes* Loew 1847, *aurantiaca* Becker 1913, *aurata* Loew 1854, *aureomaculata* Kröber 1912, *aureoscutellata* Kröber 1914, *auricincta* Egger 1859, *bequaerti* Kröber 1914, *bicinctella* Costa 1883, *bicolor* Kröber 1912, *bifasciata* Kröber 1913, *binotata* Loew 1847, *bipunctata* Loew 1847, *bipunctata* Meigen 1820, *biroi* Kröber 1913, *bisignata* Costa 1835, *bi-signata* Costa 1835, *bivittata* Loew 1840, *bosniaskii* Handlirsch 1907, *brevicornis* Loew 1847, *brevipennis* Loew 1840, *brunninervis* Kröber 1913, *caerulescens* Panzer 1804, *caesia* Meigen 1835, *callosa* Kröber 1912, *canescens* Kröber 1912, *canescens* Zetterstedt 1859, *carbonum* Meyer 1851, *carbonum* Heyden 1856, *caucasica* Kröber 1913, *chrysargyra* Séguy 1953, *cincta* Meigen 1820, *cinerea* Fabricius 1805, *cinifera* Meigen 1830, *circumscripta* Kröber 1913, *circumscripta* Loew 1847, *citrina* Becker 1902, *claripennis* Loew 1847, *clausa* Frey 1911, *coleoprata* Latreille 1805, *confinis* Fallén 1814, *confusa* Kröber 1913, *conica* Kröber 1913, *corpulenta* Kröber 1929, *crasipennis* Fabricius 1794, *curta* Kröber 1913, *decipiens* Kröber 1913, *didyma* Loew 1847, *discreta* Becker 1922, *dispar* Loew 1840, *dispar* Wiedemann 1820, *dubia* Fabricius 1805, *eggeri* Lyneborg & Spitzer 1974, *eximia* Meigen 1820, *fasciata* Meigen 1804, *fasciatus* De Geer 1776, *femoralis* Kröber 1914, *fenestrata* Kröber 1913, *flavescens* Loew 1847, *flavicornis* Eversmann 1834, *flavicornis* Kröber 1912, *flavilabris* Meigen 1820, *flavipennis* Kröber 1913, *flavipes* De Geer 1776, *flavipes* Fabricius 1794, *flavipes* Fallén 1814, *flaviventris* Kröber 1912, *flavopilosa* Kröber 1914, *frauenfeldi* Loew 1856, *frauenfeldii* Loew 1856, *freidbergi* Lyneborg 1976, *frontalis* Schummel 1839, *frontata* Becker 1908, *frontata* Kröber 1912, *frontosa* Kröber 1912, *fulva* Meigen 1804, *fulvibarba* Kröber 1912, *fulvicornis* Kröber 1924, *fulvipennis* Kröber 1912, *funebis* Meigen 1820, *fuscinervis* Zetterstedt 1838, *fuscipennis* Meigen 1820, *glabra* Báez 1982, *glabra* Kröber 1928, *glauca* Kröber 1913, *glauescens* Kröber 1912, *gomeræ* Báez 1982, *græca* Kröber 1912, *grancanariensis* Báez 1982, *grisea* Eversmann 1834, *grisea* Kröber 1913, *grisescens* Becker 1922, *gruenbergi* Kröber 1912, *grünbergi*

Kröber 1912, *handlirschi* Kröber 1912, *hebes* Loew 1869, *helvetica* Kröber 1937, *hemipterus* Fabricius 1794, *hermanni* Kröber 1912, *hermaphrodita* Becker 1922, *hilarimorpha* Kröber 1912, *hirta* Kröber 1913, *hirtus* De Geer 1776, *hispanica* Strobl 1909, *holoserica* Fabricius 1805, *hyalina* Kröber 1913, *hyalipennis* Fallén 1815, *imberbis* Fallén 1814, *innotata* Kröber 1912, *inornata* Verrall 1909, *insularis* Becker 1922, *intermedia* Kröber 1913, *intersectus* Geoffroy in Fourcroy 1784, *ishikariana* Matsumura 1916, *ishikarina* Nagatomi & Lyneborg 1989, *issikariana* Kröber 1937, *lacteipennis* Becker 1913, *lanata* Kröber 1912, *lanata* Zetterstedt 1838, *lapponica* Zetterstedt 1838, *laticornis* Loew 1856, *latistriata* Kröber 1913, *lauferi* Strobl 1909, *lichtwardti* Kröber 1913, *lugens* Loew 1847, *lugubris* Fabricius 1787, *lugubris* Gmelin 1790, *lugubris* Meigen 1804, *lunulata* Zetterstedt 1838, *lutescens* Loew 1869, *macedonica* Kröber 1937, *maculipennis* Kröber 1912, *magnicornis* Meunier 1908, *major* Matsumura 1905, *manchoulensis* Ôuchi 1943, *marginata* Fabricius 1781, *marginata* Meigen 1820, *marginula* Meigen 1820, *marmorata* Kröber 1912, *maruyama* Kröber 1937, *maruyamana* Matsumura 1916, *melaleuca* Loew 1847, *melanostoma* Loew 1856, *microcephala* Loew 1847, *mirabilis* Lyneborg 1987, *modesta* Becker 1922, *monos* Harris 1779, *monticola* Becker 1922, *muscaria* Fallén 1815, *nana* Fallén 1815, *nana* Wollaston 1858, *neglecta* Kröber 1912, *nervosa* Loew 1847, *nigrifrons* Kröber 1913, *nigripennis* Ruthe 1831, *nigripes* Loew 1847, *nitida* Macquart 1834, *nitidifrons* Kröber 1913, *niveifacies* Kröber 1912, *niveipennis* Eversmann 1834, *nobilis* Gmelin 1790, *nobilitata* Fabricius 1775, *nobilitata* Loew 1840, *nova* Kröber 1913, *nuda* Loew 1856, *obesa* Fabricius 1798, *obscuripes* Kröber 1913, *obtecta* Loew 1847, *occulta* Becker 1908, *oculata* Egger 1859, *olivieri* Becker 1902, *olivieri* Macquart 1840, *opaca* Kröber 1913, *ordubadica* Paramonov 1927, *ornata* Kröber 1912, *pallipes* Loew 1869, *panotshinii* Paramonov 1927, *penguus* Loew 1850, *phaeoptera* Costa 1883, *pilifrons* Kröber 1912, *pilipes* Fabricius 1805, *plabeja* Latreille 1805, *plebeia* Latreille 1805, *plebeius* Schrank 1803, *plebeja* Linnaeus 1758, *plebeja* Macquart 1839, *poecilopa* Loew 1871, *poeciloptera* Loew 1847, *porrectifrons* Kröber 1937, *powelli* Séguy 1930, *praecox* Egger 1859, *praestans* Collin 1948, *punctipennis* Wiedemann 1821, *purpurariae* Frey 1958, *pygmaea* Fallén 1815, *rhomboidalis* Kröber 1912, *robusta* Kröber 1912, *rodanii* Kröber 1925, *rondanii* Jaennicke 1867, *rossica* Becker 1922, *ruficandis* Loew 1847, *ruficaudis* Wiedemann 1820, *ruficornis* Gimmerthal 1847, *rufipes* Macquart 1834, *rufipes* Meigen 1804, *rufiventris* Kröber 1912, *rustica* Fallén 1814, *rustica* Loew 1840, *rustica* Panzer 1804, *rusticus* Becker 1902, *satanas* Kröber 1912, *semirufa* Kröber 1912, *sobrina* Kröber

1912, sordida Panzer 1805, speculiferum Enderlein 1934, spilopecta Wiedemann 1824, spinulosa Loew 1847, stigmatica Kröber 1912, striata Kröber 1913, strigata Fabricius 1794, subcoleoptrata Fabricius 1798, subcoleoptratus Fabricius 1775, subfasciata Schummel 1839, subfulva Kröber 1912, subnitida Kröber 1913, subtilis Loew 1847, suifenensis Ôuchi 1943, superba Egger 1859, sybarita Loew 1873, taeniata Meigen 1820, teydea Frey 1936, teydea intermediata Báez 1982, teydea orientalis Báez 1982, teydea teydea Frey 1936, thermophila Trojan 1970, thoracica Macquart 1840, tibialis Meigen 1820, tuberculata Becker 1922, tomentosa Kröber 1913, tristis Loew 1847, tuberculata Loew 1847, tubercu-

late Steskal & El Bialy 1967, unicolor Kröber 1913, unicus Harris 1779, ursina Wahlberg 1854, valida Loew 1847, venosa Kröber 1914, vetula Zetterstedt 1838, vittata Loew 1840, vulpina Kröber 1912, xestomyzina Strobl *in* Czerny and Strobl 1909, zonata Kröber 1912.

#### *PATRIA IGNOTA AND PUBLICATION ERRORS*

dejecta Walker 1852, latifrons Macquart 1848, marcelini Théobald 1937, porcellus Sherborn 1933, rubicunda Panzer 1804, taeniata Panzer 1804, tenuitarsum Sherborn 1933.

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